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ABSTRACT

Intended for parents and educators, the self-directed study guide provides objectives, resources, and quizzes on the education and creative development of gifted and talented youth. Contained in each of the 19 topic guides are the following components: topic organizer, minimum content objectives, topic rationale, preinstructional self-quiz, bibliography, recommended projects and activities, and a final self-quiz. Presented in Unit I are topic guides on a general introduction, nature and measurement of intelligence, and intellectual development. Unit II provides guides to aspects of gifted and talented education: student characteristics, student problems, student identification, cultural differences, instructional procedures, educational programs, parental roles, and evaluation procedures. Unit III, on creativity, contains guides to the following topics: theories and definitions, identification and measurement, characteristics, social and cultural influences, educational programs, the teacher's role, design of instruction, and educational innovations. Answer keys to the preinstruction quizzes are provided in the back of the handbook. (PT)

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Self-Directed Study Guide

on the education of the gifted and the talented

BY DONALD J. TREFFINGER AND CLIFFORD D. CURL

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PREFACE

This study guide is the result of our strong convictions about learning and how it occurs—for adult learners as well as for children. We believe that it is very important for students of any age to learn how to manage and direct their own efforts, and to use what is learned in creative ways for practical applications. We also believe that teachers, counselors, parents, and others interested in educating gifted, talented, and creative students can understand the ***teaching*** process better through their own personal and creative involvement in the ***learning*** process.

In our respective roles as university professor and state department consultant, we have worked closely with parents, teachers, administrators, and other professional staff members to train effective leaders to improve the total educational process for gifted, talented, and creative students. With the publication of this ***Self-Directed Study Guide***, we sincerely desire that others may be assisted in reaching the same goals. We hope that the approach of "freedom-within-structure" will provide an illustration of some methods and techniques for guiding the learning of gifted, talented, and creative students, as well as a positive experience for the reader.

We wish also to express our thanks to Mrs. Patty Euler and Mrs. Lise Barr, who devoted many hours to typing the manuscript; to about 200 teachers, graduate students, and parents, who have used the guide and given us valuable feedback; and the N/S-LTI-G/T staff for their encouragement and support for this project.

D.J.T. – C.D.C.
Lawrence, Kansas
July, 1976

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OVERVIEW

This handbook is a ***Self-Directed Study Guide*** on the education of gifted, talented, and creative students. The purpose of the program is not to ***teach*** you, but to assist you in organizing and directing your own learning experiences. This program will not completely ***replace*** books, instructors, or classroom instruction, but will assist you in the process of making choices and planning your efforts.

The ***Self-Directed Study Guide*** is divided into three general units, which are:

I. **Introduction.** The introductory unit consists of three topics which are intended to help you answer some basic questions: what is human intelligence and talent? how does talent develop? how do we recognize ability? why should we be concerned with these problems in education?

II. **The Gifted and Talented.** This unit consists of eight topics, involving various aspects of education of the gifted and talented: characteristics, problems, identification procedures, culturally different students, educational programs and curricula, classroom instructional procedures, evaluation, and a special topic on the parents' role.

III. **Creativity and education.** This unit also consists of eight topics, each of which considers one aspect of the study of creativity: theories and definitions, measurement, characteristics, social and cultural influences, educational programs and curricula, instructional procedures, the teacher's role, and a special topic relating creativity to educational innovations.

In planning your work, these units should help you in organizing material to be learned and in making choices about readings, projects, and other activities. The topics in Unit I are intended to provide a very basic foundation for the student who has virtually no background in the area of the education of the gifted and talented or the psychology of intelligence. You should read the first three sections of the three topics in Unit I, and take the Pre-Instruction Self-Quizzes to determine whether or not you already know the material in this unit. This is particularly important, since topics in Unit II and III will build quite directly upon material from Unit I.

The topics in Unit II are intended to provide you with opportunities to learn about many different aspects of the gifted and talented. The material in these topics will help you, as a parent, teacher, counselor, school psychologist, or administrator, to identify gifted and talented students, and to determine appropriate educational provisions for them. These topics will be as valuable for the regular classroom teacher as for a person planning to work

in a "special" program, since most teachers quite commonly have to solve the problem of working with gifted and talented students each year.

In Unit III, you will be able to study many aspects of ***creativity***, a very fascinating subject, frequently misunderstood and little emphasized in school. The topics in this unit do not assume that creativity is a rare kind of genius, present only among a few individuals, but that every person possesses a degree of creative talent which can be nurtured and expressed in a well-planned educational environment. To some extent, therefore, these topics are addressed to every teacher. We assume that it is appropriate for all teachers to help every student recognize, develop, and express his or her creative potential.

Using the Self-Directed Topic Guides

If you are using this program as part of a regular course, you will receive specific directions from your instructor concerning how to use the Topic Guides. The material in them will be useful in planning your work and in implementing your study in a systematic fashion.

If you are using this program on your own, in an independent study or "directed readings" course, or in a course which employs a contract plan or "learner-controlled" approach, the Topic Guides will be particularly useful to you in selecting the topics you plan to study, organizing your work, and conducting appropriate activities to reach your goals.

For each of the 19 Topics in this program, there is a separate Topic Guide, which contains these seven components:

1. **Topic Organizer**
2. **Minimum Content Objectives**
3. **Topic Rationale**
4. **Pre-instructional Self-Quiz**
5. **Bibliography**
6. **Recommended Projects and Activities**
7. **Final Self-Quiz**

Each of these components has been prepared for a specific purpose, which we hope you will read carefully. If you become well acquainted with the entire program now, it will help to reduce the amount of time you spend "spinning your wheels," wondering what to do and how to begin.

1. **Topic Organizer.** The first part of each Topic Guide presents a few very general questions. Their purpose is quite simple: to provide you, in the most general terms, an idea of what the topic concerns. The questions identify the key subjects you will encounter if you pursue the Topic.

2. **Minimum Content Objectives.** The next section of each Topic Guide presents, in ***informational*** form, the basic content objectives for that topic. These have been written as specifically as possible, to help you to determine clearly the ***knowledge*** or ***factual information*** involved in your initial introduction to that topic. These objectives describe specific information you will be expected to learn, remember, and be able to express in your own words.

   (More complex goals, such as ***application*** of what you learn to practical problems, ***analysis***, ***synthesis***, and ***evaluation*** will be attained through your subsequent involvement in the projects and activities for the topic. Since these goals will vary according to the projects you select, specific objectives have not been included for them in the Topic Guides. You may find it valuable to write out your own objectives for the projects you select.)

3. **Topic Rationale.** The ***Topic Rationale*** offers you a brief survey of the key issues and ideas in the subject, and illustrates the relevance of those issues for the educator. It is intended to help you analyze the importance of the topic in relation to your own needs and goals, and to "highlight" some of the major concepts and principles you will study in the topic. It helps you in thinking about the question, "What would I get from studying about this topic?" It does not attempt to teach you the topic, or to present detailed facts of knowledge about the topic, so it is ***not*** a substitute for reading and study.

4. **Pre-Instruction Self-Quiz.** This will help you to determine whether you are already familiar with the basic information included in the minimum content objectives. After you have read the ***Topic Organizer***, the ***Minimum Content Objectives***, and the ***Topic Rationale***, you may answer the questions in this ***Self-Quiz***. By answering them and checking the answers yourself (using the key provided at the end of the book) you will be better able to determine how you should proceed in studying the topic. If you can already answer correctly all or most of the questions on the Self-Quiz; you may not need to complete the basic reading recommendations, for the material will already be familiar to you. Thus, you may find it valuable to select other readings from the ***Topic Bibliography***, and to plan to begin appropriate projects and activities immediately. (If you are working in a course, your instructor can also use the results of your Self-Quiz to assist you in selecting appropriate readings.)

   If you are unable to answer correctly the questions on the ***Pre-Instructional Self-Quiz***, but you decide that you are interested in the Topic, you should certainly begin to work with the basic references for the Topic.

5. **Bibliography or Reference List.** In order to assist you in learning about the topics, each one is accompanied by an extensive bibliography. Of course, your reading will be influenced by the amount of time you can devote to your studies and the resources that are available. ***We do not expect that anyone will read all of the references given in the bibliographies.***

   For your convenience in planning your reading, the ***Bibliography*** has been divided into three sections: (A) basic readings, frequently from textbooks, to provide you with an introduction to the material included in the ***Minimum Content Objectives***; (B) additional important readings, generally from journals and primary sources, to supplement the basic readings in helping you acquire the knowledge described by the ***Minimum Content Objectives***; and (C) a more extensive bibliography, to enable you to continue reading on the topic after attaining the minimum objectives.

   By working through the Level A and B reading recommendations, you should be able to meet the Minimum Content Objectives quite readily. The Level C bibliography is a supplementary reading list, from which you may draw if you are interested in continuing your study of the topic beyond the introductory concepts included in the ***Minimum Content Objectives***. The Level C readings have been selected for their relevance and usefulness for educators, and to represent important research problems in the topic.

6. **Recommended Projects and Activities.** Each Topic Guide includes several suggestions for projects and activities, which you can conduct after completing appropriate reading and study (from at least the Level A and B bibliographies). The projects and activities are intended to help you to apply the material you are learning in practical teaching situations, to analyze problems and issues, to use your knowledge in creating new plans and products, and to make judgments and decisions more effectively.

You will probably not be able to conduct all of the projects and activities for any topic you're studying; the list is intended to make available a wide range of choices or alternatives. You should select, therefore, those projects and activities that meet three criteria:

1) They meet your needs and interests;
2) You are prepared to conduct them (i.e., the necessary material and/or equipment is available);
3) You can reasonably complete them within the limitations of time and resources available to you.

The ***Recommended Projects and Activities*** have been organized into three groups for you: a) ***general projects***, emphasizing immediate educational applications; b) ***advanced projects and activities***, emphasizing creative production, critical analysis, and systematic, detailed inquiry into a theoretical or research problem; and, c) ***major projects***, which are efforts that will involve considerable time and energy over an extended period of time for successful completion.

The ***Projects and Activities*** enable you to extend your learning for each topic beyond the level of memorization and recall of knowledge. They are intended to provide you with opportunities to ***use*** what you have learned in more complex settings, related to your own goals and situation. You should select carefully those Projects and Activities which you anticipate can contribute most directly to making your study of the topic meaningful and worthwhile. You may also be able to identify and conduct other projects which are not mentioned in the recommended list; by all means, feel free to develop and conduct such activities. (If you are studying this program in a regular course, it would be a good idea to discuss your plans with your instructor before carrying them out!)

7. **Final Self-Quiz.** Each Topic Guide also includes a ***Final Self-Quiz***. Its purpose is to assist you in checking on whether or not you have adequately attained the ***Minimum Content Objectives***. It provides a brief "check-up" on that basic knowledge about the topic from the Objectives and the Level A and B references. The ***Final Self-Quiz*** is ***not*** intended to be a comprehensive evaluation of your mastery of the area, nor a formal evaluation of the quality of your work. (If you are enrolled in a course, your instructor will describe for you the appropriate procedures for evaluation and grading.) At the conclusion of the ***Final Self-Quiz***, you will find guidelines for relating the quiz questions to the ***Minimum Content Objectives*** and the level A and B Bibliographies, so you can check any errors you made.

Using the Topic Guides To Advantage

> **Note:** If you are enrolled in a formal course your instructor will specify procedures which may supplement or replace the directions in this section.

If you are using this ***Self-Directed Study Guide*** on your own, or in a course which employs a Learner-Controlled-Instruction approach, you will have to make a number of decisions on your own.

Goals and Objectives. Your first decision involves determining your personal goals and needs, and, in accord with that decision, the process of selecting the topics that will be most beneficial for you. You will need to ask, "What Topics should I study in order to attain my goals effectively and efficiently?"

We recommend that you begin by writing out for yourself, even in very rough form, a general statement of your personal goals for learning about gifted, talented, and creative learners. Then, by working with the Topic Guides (and particularly by using the ***Topic Organizer***, ***Minimum Content Objectives***, ***Topic Rationale***, and ***Pre-Instruction Self-Quiz***) you can begin to select specific topics.

The number of Topics you choose may vary for several reasons: specific course requirements, the amount of time you are able to devote to your studies, or the actual nature of your personal goals. We have found that most students are able to work successfully on seven to nine Topics during the course of a typical academic semester. Some students, of course, complete fewer Topics, but develop additional objectives for each one for themselves and conduct additional projects and activities.

You will find it helpful to keep a written record of your general goals as well as the specific Topics you have selected. In order to facilitate this, a sample contract form is included on page 8.

If your goals and choices of Topics change as you become involved in your work, you should feel free to modify your personal contract. We have usually found it helpful, however, if such changes are described in a written addition to the contract.

Distribution of efforts. Another decision you will have to make involves the distribution of your efforts over the various Topics you select. As a result of long experience of being told exactly what to do, how to do it, and when to turn it in, many students find it difficult to assume for themselves the responsibility for conducting their work at their own pace. But, in order to meet your own personal goals, we believe it will be important for you to assume that responsibility. In general, of course, you will find that the three Topics in Unit One provide a foundation for subsequent Topics, so they might best be studied at the beginning of your program of study. However, you will find that you will have considerable latitude in deciding the sequence in which you should pursue your Topics, and the amount of time you spend with each one.

Coordination of Projects and Activities. Although projects and activities are described in each Topic Guide, you will find that they are not necessarily separate and distinct from each other in relation to your total program of study. You may have one general goal, to which all of the Topics you have

selected will contribute; accordingly, you may wish to coordinate your choices of projects and activities for each Topic to contribute directly to that general goal. For example, you may begin with a general goal like this: "As a result of this program of study, I want to be able to identify the children in my class with exceptional academic ability, and provide enrichment opportunities involving independent inquiry into problems relating to their own interests." You might decide next that ***seven*** topics will best assist you in attaining your goal: Topic 4 (Characteristics of the Gifted and Talented), Topic 6 (Identification of the Gifted), Topic 9 (Instructional Procedures), and Topic 10 (Evaluation), and to attain the necessary background, you select all three Topics from Unit One.

When you are ready to work on projects and activities for each of your Topics, it will be helpful for you to keep in mind your general goal, and to select and develop your projects accordingly. In the example, you would attempt to carry out projects and activities that would help you recognize children in your class with exceptional academic ability, develop enrichment opportunities for them stressing independent inquiry, and plan for appropriate evaluation of those enrichment experiences. Although you will have selected several different Topics and conducted one or more projects for each one, ***all*** of your efforts would contribute to the attainment of your general goal.

Evaluation and Grading. Finally, you will also have to assume some of the responsibility for evaluating your own work. At the level of knowledge of specific facts and information, you will be able to use the ***Final Self-Quiz*** for each topic to check your own progress. We assume that you recognize that the quality of the work you do on projects and activities will be quite directly influenced by the degree of competence you attain in the basic content of the topic. Simply stated, you can't analyze problems or develop practical, creative applications if you don't know the material with which you have to work.

If you are studying this program on your own, or in a course using a Learner-Controlled-Instruction approach, there will probably be many options that are open to you for evaluating your work at the more complex levels, too.

GIFTED, TALENTED, AND CREATIVE LEARNERS

CONTRACT

Name _____ Date _____

I. Write out briefly a statement of your general goals:

_____

_____

_____

_____

_____

_____

_____

II. Record here your selection of specific topics:

Unit One:
Introduction Topics

1. Introduction and Overview ☐
2. Intelligence: Nature & Measurement ☐
3. Intellectual Development ☐

Unit Two:
The Gifted and Talented

4. Characteristics ☐
5. Problems ☐
6. Identification Procedures ☐
7. The Culturally Different ☐
8. Instructional Procedures ☐
9. Educational Programs ☐
10. Role of Parents ☐
11. Evaluation Procedures ☐

Unit Three:
Creativity in Education

12. Theories and Definition ☐
13. Identification/Measurement ☐
14. Characteristics ☐
15. Social & Cultural Influences ☐
16. Educational Programs ☐
17. Teacher's Role ☐
18. Designing Instruction ☐
19. Educational Innovations ☐

III. Record here any special notes, conditions, or contract changes:

_____

_____

_____

_____

_____

_____

SELF-EVALUATION. The ultimate test of the quality or value of your projects and activities will be their usefulness in helping you reach your goals. Since you are in a good position to determine your success on that basis, you may have the opportunity to employ ***self-evaluation*** procedures to determine all or part of a course grade. Some criteria that may be useful for you to consider when you initiate self-evaluation procedures are:

1. Was your contract adequate for your interests, needs, background, and experience? (In retrospect, how well did you do in defining your goals and planning your contract?)
2. Did you satisfy the conditions of your contract? In relation to this question, you might consider the several dimensions of the cognitive and affective taxonomies:

   a) What evidence is there that you acquired new *knowledge* about creativity and the education of the gifted and talented?

   b) What evidence is there that you *comprehend* that knowledge, and can express key ideas in your own words?

   c) What evidence is there that you can effectively *apply* your knowledge in appropriate situations?

   d) What evidence is there that you are able to *analyze* teaching and learning problems?

   e) What evidence can you provide that attests to your ability to *synthesize* your learning in the creation of new plans or products to high quality?

   f) What evidence do you have of improvement in your ability to *evaluate* or make decisions about creativity and the education of the gifted and talented?

   g) What evidence do you have of significant changes in your feelings, attitudes, or values concerning issues related to the gifted, talented, or creative learner?

   h) What evidence can you present of commitment on your part to certain values concerning the gifted, talented, and creative learner? (What values?)
3. Can you use your own learning experience in this course to identify new problems and challenges? What are some of your unanswered questions? What are some ways you may set out to answer them? How would you proceed differently if you were just beginning this course now for the first time?

If you are enrolled in a course, specific evaluation procedures will be described by your instructor. The Point System described below represents one alternative we have found useful.

POINT SYSTEM. One approach that we found useful, especially in graduate courses, has been to determine course grades using a ***point system*** for evaluating projects and activities. You may have an opportunity to use this approach in your course; if you are studying this program on your own, the point system may be useful to you in comparing for yourself the expectations that might apply if you were enrolled in a formal course. Therefore, we have included in the lists of ***Projects and Activities*** for each Topic a suggested ***maximum point value***, and will describe here the procedures we follow in using the point system.

In fulfilling your contract, you are expected to complete appropriate readings relating to the ***Minimum Content Objectives***, and to complete a minimum of one project or activity for each topic you select. The number of projects completed for each Topic may vary at your own discretion. For each project, the student prepares a report (which may be a written report; a

product in other media, such as a tape, slide set, or film, etc.; or an oral report or presentation to the instructor or the class). When the report is prepared, the student identifies specifically the ***Topic*** for which the project was conducted, and the number of points requested (keeping in mind the maximum point values stated for each project). ***The report should emphasize the relationship of the project of activity to the Topic for which it was conducted.*** That is, you should demonstrate in the report that the project contributed to your knowledge and understanding of the Topic, not just that the project was "enjoyable," "interesting," or "worthwhile."

The instructor will read the report, provide a written or an oral critique, including specific suggestions about ways for improving the product, other resources to consider, problems or critical questions which are raised, etc. The instructor will then make a ***point offer*** based upon the points requested, the maximum value of the project, and the critique. The student has three alternatives:

(a) accept the offer, in which event a record is kept of the project, the Topic for which it was conducted, and the number of points;

(b) revise the report, taking into account the instructor's critique, and resubmit it;

(c) review the critique and discuss the project and your report with the instructor to establish the number of points to be awarded.

Where traditional letter grades are used, course grades will be determined according to a fixed schedule.

Number of Points Earned	Grade
30 or more	A
22-29	B
17-21	C
Fewer than 17	D or F

A written log of your projects, the topics for which they were conducted, and your points will be maintained throughout the course, so you can always determine your current standing.

INDEX OF SELECTED EDUCATIONAL AND PSYCHOLOGICAL JOURNALS

Journal	Comments
American Educational Research Journal	Research, theory, methodological issues, discussions and reviews; technical.
A–V Communication Review	Research and theory on communication.
British Journal of Educational Psychology	Original research in any area of educational psychology.
British Journal of Educational Technology	Theory and research-instruction, technology in education.
California Journal of Educational Research	Original research on education—many topics.
Child Development	Research and theory of development.
Child Study Journal	Theory and research on any aspect of child study.
Contemporary Psychology	A journal of book reviews—all areas of psychology.
Developmental Psychology	Original research—focus on development.
Educational Forum	Philosophical and critical analyses of educational problems.
Educational Leadership	Education: contemporary issues, problems, areas of study.
Educational & Psychological Measurement	Focus on testing and measurement issues and research.
Educational Psychologist	Nature and scope of educational psych.; teaching educational psychology; various papers on other topics.
Educational Technology	Theory and research-instruction, tech. in education.
Educational Theory	History, theory, philosophy of education.
Exceptional Children	Articles on special groups (e.g., gifted, retarded).
Gifted Child Quarterly	Focus on creativity and gifted.
Harvard Educational Review	Original papers on any aspect of education—often philosophical and sociological.
Journal of Applied Psychology	Original research-applied areas of psychology.
Journal of Creative Behavior	Theory and research on many aspects of creativity.
Journal of Educational Measurement	Studies pertaining generally to measurement and evaluation in education.
Journal of Educational Psychology	Original research on any aspect of educational psychology; technical.
Journal of Educational Research	Original research in education—many topics, usually brief.

Journal	Comments
Journal of Experimental Education	Original research—many areas of education.
Journal of Experimental Psychology	Original experimental research in psychology—technical.
Journal of General Psychology	Original research—many areas of psychology.
Journal of Health, Physical Education, and Recreation	Theory, research, reviews—physical development and skills.
Journal of Personality	Theory and research—many areas of psychology related to study of personality.
Journal of Personality & Social Psychology	Original research—many areas of experimental social psychology.
Journal of Teacher Education	Theory and research on all aspects of teacher education.
Journal of Verbal Learning & Verbal Behavior	Technical; research on verbal learning.
Merrill Palmer Quarterly	Theory and research—developmental psychology.
NSPI Journal	Research and theory on programmed instruction and instructional development.
Perceptual and Motor Skills	Original research—many topics.
Phi Delta Kappan	Theory, comment, assessment of educational thinking and research.
Psychological Bulletin	Technical papers and research—many areas of psychology.
Psychological Reports	Original research—any area of psychological inquiry.
Psychological Review	Reports on theory and methodology—many areas.
Psychology in the Schools	Original research, theory, and review—wide range of topics.
Psychology Today	General articles about psychology—theory and research—for the critical "layman."
Psychonomic Science	Original research—many areas—learning and experimental psychology.
School Review	Theory and research—many areas of education.
Review of Educational Research	Reviews of theory and research—many educational areas.
Theory into Practice	Topical issues in education—surveyed by theorists and researchers.

Other General Resources

Several textbooks and anthologies are cited quite frequently in the Bibliographies in the Topic Guides. For convenience, these general resources are also listed here.

Aschner, M. J. and Bish, C. E. (Eds.), *Productive Thinking in Education*. Washington: National Education Association, 1968.

Barbe, W. B. and Renzulli, J. S. (Eds.), *Psychology and Education of the Gifted*, (Second Edition), New York: Irvington Publishers, 1975.

Davis, G. A., *Psychology of Problem Solving: Theory and Practice*. New York: Basic Books, 1973.

Davis, G. A. and Scott, J. A. (Eds.), *Training Creative Thinking*. New York: Holt, Rinehart, & Winston, 1971.

French, J. L. (Ed.), *Educating the Gifted: a Book of Readings*. New York: Holt, Rinehart, & Winston, 1964.

Gallagher, J. J., *Teaching the Gifted Child*, (Second Edition). Boston: Allyn and Bacon, 1975.

Gallagher, J. J., (Ed.) *Teaching Gifted Students: a Book of Readings*. Boston: Allyn and Bacon, 1964.

Gold, M. J., *Education of the Intellectually Gifted*. Columbus: Merril, 1965.

Gowan, J. C., Demos, G. D., and Torrance, E. P. (Eds.), *Creativity: its Educational Implications*. New York: Wiley, 1967.

Gowan, J. C. and Torrance, E. P. (Eds.), *Educating the Ablest: a Book of Readings on the Education of Gifted Children*. Itasca, Illinois: F. E. Peacock, 1971.

Hildreth, G. H., *Introduction to the Gifted*. New York: McGraw-Hill, 1966.

Kaplan, S. N., *Providing Programs for the Gifted and Talented: a Handbook*. Ventura County, (California) Superintendent of Schools Office, 1974.

Mooney, R. L. and Razik, T. A. (Eds.), *Explorations in Creativity*. New York: Harper & Row, 1967.

Parnes, S. J., *Creative Behavior Guidebook*. New York: Scribner's, 1967.

Parnes, S. J., *Creative Behavior Workbook*. New York: Scribner's, 1967.

Parnes, S. J. and Harding, H. H. (Eds.), *A Source Book for Creative Thinking*. New York: Scribner's, 1962.

Organizations of Interest

For educators concerned with creativity and with the education of the gifted and talented, there are several offices and organizations that should be familiar to you.

The Creative Education Foundation is an organization whose goal is to promote creativity in education. The Foundation is active in sponsoring creative problem-solving institutes, workshops, and seminars. An annual institute is held in Buffalo, New York, in June of each year, and shorter workshops are conducted in other locations during the year. The Foundation publishes the ***Journal of Creative Behavior*** and distributes a variety of other publications on creativity. For information, write to Angelo M. Biondi, Creative Education Foundation, Chase Hall, 1300 Elmwood Avenue, Buffalo, NY 14222. (The minimum annual individual membership, which includes a subscription to the ***Journal of Creative Behavior***, is $15.)

The **National Association for Gifted Children** is an organization concerned with the development of gifted and talented children and youth at home and in school. Membership in the organization for an individual costs $20, which includes a subscription to the ***Gifted Child Quarterly***. For additional information, write to John C. Gowan, 9030 Darby Avenue, Northridge, CA 91324.

The Association for the Gifted (TAG) is a division of the Council for Exceptional Children (CEC). Members of TAG must also join CEC; cost of membership varies slightly according to location, state organizations, and professional status (with student memberships costing less). Members receive CEC publications, including the journal ***Exceptional Children***, as well as the ***TAG Newsletter*** and other irregular special publications. For additional information, write to Council for Exceptional Children, 1920 Association Drive, Reston, VA, 22901.

The United States Office of Education also has a special office to develop and support educational programs for the gifted and talented. While this office does not have "members", or a regular journal or newsletter, you may wish to write them to be placed on their general mailing list for future conferences, publications, or programs of support for the education of the gifted and talented. Write to Harold C. Lyon Jr., U. S. Office of Education, Office of Gifted and Talented, Room 2100, ROB-3, 7th and D St., S.W., Washington, D. C. 20202.

National State Leadership Training Institute on the Gifted and the Talented was established by the Office for Gifted and Talented in 1972 to work with school districts in upgrading supervisory personnel and program planning for gifted education. Their services (some through contract) include inservice training workshops, long term and short term planning, assistance with funding and legislation, dissemination of information, and demonstration classrooms for observation. A monthly eight-page ***Bulletin*** covers current news of gifted education. Yearly subscription is $11. The N/S-LTI-G/T headquarters are at 316 West 2nd Street, PH-C, Los Angeles, CA 90012, (213) 489-7470.

The **ERIC** system is a national program for dissemination of information about educational research and development efforts. ERIC publications and literature searches are available from several Clearinghouses throughout the country. For information concerning the gifted and talented, write to ERIC Clearinghouse on Handicapped and Gifted, 1920 Association Drive, Reston, VA 22091.

Another source of information, materials, and assistance is the list in Appendix A of *Teaching the Gifted Child*, Second Edition, by James J. Gallagher, Allyn and Bacon, Inc., Boston, 1975.

Basic Project List

Project or Activity	Maximum Point Value Per Project
1) ***Written paper*** (approx. 5-10 pp. typed; review of theory or research in some relevant area.)	3
2) ***Abstract*** an appropriate research article. (Guidelines available from instructor. Book report fits in this category, too.)	1
3a) ***Design*** an appropriate research project or experiment in a relevant area.	2
3b) ***Conduct*** the experiment and write up the results.	3
3c) If your paper is accepted for ***publication*** in any professional journal.	A in course
4) ***Visit*** any of the following, and ***report*** on your observations in relation to one of the course topics: a) any public school classroom, (look for illustrations of ideas discussed in class!) b) a special education program for gifted, talented, or creative children c) a classroom in a special school for high ability children d) a Montessori school e) Summerhill, or a Free or Experimental school f) any college course g) a teacher's lounge in any public school	3
5) ***Interview*** any of the following about some aspect of the topics included in this course, and ***report*** on your observations: a) a child or some children b) parents c) teachers d) school board members e) PTA officers f) politicians g) officials of state instruction departments, professional groups, teachers' unions, etc. h) school psychologist i) school administrator	3

6) ***Identify a group*** of gifted, talented, or creative children, and:

   a) observe them all in a group for an extended period of time, and ***report*** and/or — 2

   b) teach them something. . . .for a few hours, days or weeks and/or — 2

   c) report on what they teach you! — 1

7) ***Observe*** in some classrooms for a period of time. Report on some ***relevant observations***, such as: — 3

   a) how individual differences are provided for

   b) how various thinking processes are, or are not, involved in teacher's questions and other classroom events; etc.

8) ***Analyze*** several text books in an area of your choice with respect to their suitability for gifted, talented, or creative pupils. — 3

9) ***Attend*** a regional or national convention of educators and report on relevant aspects of the program. — 3

10) ***Identify*** and ***implement*** a program of personal study to enhance your own creative thinking and problem-solving ability, and report on your experiences. — 5

11) ***Compare*** and ***evaluate*** the writings of several current critics of American education (with emphasis on their views which relate particularly to topics included in this course. Obtain "radical" bibliography from instructor.) — 3

12) Make an imaginative ***film*** or tape about some relevant topic; involve some children. — 5

13) ***View a film*** and write a brief, critical report, relating the content of the film to a specific topic or unit. — 2

14) ***Tutor*** a gifted child in some special area of interest and report. — 5

15) ***Participate*** in some phase of an on-going research project on creativity or education of the gifted. — 3

16) Study some new ***curriculum materials*** and report on how well they provide for individual differences in academic or creative ability, or how they might be improved. — 3

17) ***Attend a meeting*** of any kind of the following groups, and report on their consideration of matters pertaining to education of the gifted or provision for creativity: 3

a) **school board**
b) **PTA**
c) **teachers' union**
d) **faculty meeting**

18) Interview school dropouts; ask why; report and evaluate. 3

As you work on the Objectives for this Topic, you will have opportunities to examine many of the problems and misunderstandings that confront us in our concern for gifted, talented, and creative students. You will also have the opportunity to investigate the theoretical and research bases for concern for creativity and educational provisions for the gifted and talented.

Objective 1 will assist you in learning more about the historical context from which current interests in gifted and talented have developed.

Objectives 2 and 3 will help you to examine critically the needs of the gifted and talented for special educational provisions, and some of the misunderstandings that are frequently encountered in attempting to respond to those needs.

In Objective 4, you will be able to investigate the factors that must be considered when a program for the gifted and talented is planned and organized. Many efforts by educators to improve educational provisions for the gifted and talented have failed because important fundamental steps in organization and planning were overlooked.

Objective 5 involves a specific investigation of the importance of creative talent, and the need to provide opportunities in our educational programs for creative expression for all students. We believe that although only a few students may ever display exceptional creative ability (and thus be considered "creatively gifted"), it is possible—and important—for every student to think and learn in creative ways.

In reading for this Topic, you will also find evidence that the needs of gifted, talented, and creative learners have not been met adequately in American public education. The perils of our failure to provide adequately for these learners are potentially immense, and perhaps incalculable. In a time when our country (and our whole world) is confronted with more problems of greater magnitude than have ever been known in man's history, we can scarcely afford to slight exceptional talents!

As a result of your work on this Topic, then, you should become better able to respond, as a parent or an educator, to the needs of gifted and talented children or youth, and to help each student discover and use his or her own creative potential.

UNIT I

Introduction
Topic Guides

TOPIC GUIDE I:

INTRODUCTION TO THE STUDY OF THE GIFTED, TALENTED, AND CREATIVE LEARNER

Topic Organizer

The purpose of this Topic is to help you investigate several basic issues relating to the study of the gifted, talented, and creative learner. What is the background of our concern for the gifted and talented? What are the goals of educational provisions for the gifted and talented? To what extent are such provisions necessary? What are some of the basic problems and issues educators must consider in this area? To what extent are we, and should we be, concerned with creativity in our schools?

Minimum Content Objectives

1. Summarize the historical interest in the special problems and needs of the gifted and talented in American public education.
2. Explain the principal justifications for differential educational provisions for the gifted and talented.
3. Given critical statements involving misunderstandings of the nature of the problems and educational needs of the gifted and talented, explain justifiable responses to the criticisms.
4. Describe the basic factors which must be considered in developing a qualitatively differentiated educational program for the gifted and talented.
5. Explain the principal justifications for the need to provide for creativity in education, for all learners as well as for the creatively gifted or talented student.

Rationale

For many years gifted, talented, and creative learners have been among the most unique but widely misunderstood segments of the American school population. During the late 1950's, there was a sharp increase in interest in these learners (in large part related to new developments in the psychology of intelligence and such prominent world events as the Soviet Union's Sputnik I). This interest declined some in the sixties, as our priorities shifted again into other areas (such as urban education and the disadvantaged). Many long-held misunderstandings about giftedness and creativity have stubbornly resisted many efforts at correction over the years; a substantial number still persist. As a result, educational programming, curriculum development, counseling, and support for research and development for the gifted, talented, or creative learner have continued to be extremely inadequate.

As you work on the Objectives for this Topic, you will have opportunities to examine many of the problems and misunderstandings that confront us in our concern for gifted, talented, and creative students. You will also have the opportunity to investigate the theoretical and research bases for concern for creativity and educational provisions for the gifted and talented.

Objective 1 will assist you in learning more about the historical context from which current interests in the gifted and talented have developed.

Objectives 2 and 3 will help you to examine critically the needs of the gifted and talented for special educational provisions, and some of the misunderstandings that are frequently encountered in attempting to respond to those needs.

In Objective 4, you will be able to investigate the factors that must be considered when a program for the gifted and talented is planned and organized. Many efforts by educators to improve educational provisions for the gifted and talented have failed because important fundamental steps in organization and planning were overlooked.

Objective 5 involves a specific investigation of the importance of creative talent, and the need to provide opportunities in our educational programs for creative expression for all students. We belive that, although only a few students may ever display exceptional creative ability (and thus be considered "creatively gifted"), it is possible—and important—for every student to think and learn in creative ways.

In the reading for this Topic, you will also find evidence that the needs of gifted, talented, and creative learners have not been met adequately in American public education. The perils of our failure to provide adequately for these learners are potentially immense, and perhaps incalculable. In a time when our country (and our whole world) is confronted with more problems of greater magnitude than have ever been known in man's history, we can scarcely afford to slight exceptional talents!

As a result of your work on this Topic, then, you should become better able to respond, as a parent or an educator, to the needs of gifted and talented children or youth, and to help each student discover and use his or her own creative potential.

Pre-Instruction Self-Quiz

1. Write a brief summary of the interest in the special problems and needs of the gifted and talented among American educators during each of the following periods:
   a.) 19th century
   b.) 1900-1950
   c.) 1950-1960
   d.) 1960-1970
   e.) 1970-present
2. State in your own words four principal reasons why the gifted and talented require qualitatively differentiated educational provisions.
3. Identify four common misunderstandings about the gifted and talented and their educational needs, and explain briefly why each is a misunderstanding.
4. Name and explain briefly at least five factors which must be considered in developing an educational program for the gifted and talented.
5. Name and explain briefly at least three reasons for an educator to be concerned about the development and expression of creative talent among all pupils.

Bibliography

Level A

Gallagher, J. J., *Teaching the Gifted Child*. (Second Edition). Boston: Allyn and Bacon, 1975. or

Gold, M. J., *Education of the Intellectually Gifted*. Columbus: Merrill, 1965, ch. 1 and 18. or

Hildreth, G. H., *Introduction to the Gifted*. New York: McGraw-Hill, 1966, ch. 1 and 3. or

Kaplan, S. N., *Providing Programs for the Gifted and Talented: a Handbook*. Ventura (California) Superintendent of Schools, 1974, 7-41, 199-207, 211-241. or

Torrance, E. P., *Gifted Children in the Classroom*. New York: Macmillan, 1965.

Level B *(*denotes articles particularly recommended)*

1. Bish, C. (Ed.), "What's New in Education for the Gifted?" In: Gowan, J. C. and Torrance, E. P. (Eds.) *Educating the Ablest*. Itasca, Ill: F. E. Peacock, 1971, 272-276.

*2. Guilford, J. P., "Creativity: Yesterday, Today, and Tomorrow." *Journal of Creative Behavior*, 1967, 1, 3-14.

3. Holcomb, J. D., "The Gifted: Are They Being Slighted?" *Peabody Journal of Education*, 1971, 48, 238-243.

4. Horwitz, E. L., "Gifted Children." *Children Today*, 1973, 2, 27-30.

*5. Laird, A. W., "Are We Really Educating the Gifted Child?" *Gifted Child Quarterly*, 1968, 12, 205-214. (Also in: Gowan, J. C. and Torrance, E. P. *Educating the Ablest*. Itasca, Ill: F. E. Peacock, 1971, 13-15.

6. Laird, A. W., "The Fifty States' Educational Provision for Gifted Children." *Gifted Child Quarterly*, 1971, 15, 205-216.

*7. Marland. S. P., "Our Gifted and Talented Children—A Priceless National Resource." *Intellect*, October, 1972, 16-19.

8. Marland, S. P., "Send Up More Sputniks." *Gifted Child Quarterly* , 1973, 17, 203-209.

*9. Renzulli, J. S., "Identifying Key Features in Programs for the Gifted." *Exceptional Children*, 1968, 35, 217-221. (Also in Barbe and Renzulli, 1975.)

*10. Torrance, E. P., "Emerging Concepts of Giftedness." In: Barbe, W. & Renzulli, J. (Eds.) *Psychology and Education of the Gifted*. New York: Irvington, 1975, 48-55. (Excerpted from Torrance, E. P., *Gifted Children in the Classroom*, New York: Macmillan, 1965.

*11. Torrance, E. P., "Toward the More Humane Education of Gifted Children." *Gifted Child Quarterly*, 1963, 7, 135-145. (Also in Gowan, Demos, & Torrance, *Creativity: Its Educational Implications*. New York: Wiley, 1967.)

*12. Torrance, E. P., "Creativity and Its Educational Implications for the Gifted." *Gifted Child Quarterly*, 1968, 12, 67-78. (Also in Gowan & Torrance, *Educating the Ablest*. Itasca: Peacock, 1971.)

13. Witty, P. A., "The Education of the Gifted and the Creative in the U. S. A." *Gifted Child Quarterly*, 1971, 15, 109-116, 122. (Also in Barbe and Renzulli, 1975.)

Level C

Abraham, W., *Common Sense About Gifted Children*. New York: Harper & Row, 1958.

Albett, R. S., "Genius: Present-Day Status of the Concept and Its Implications for the Study of Creativity and Giftedness." *American Psychologist*, 1969, 24, 743-753.

Anastasi, A., *Individual Differences*. New York: Wiley, 1965.

Bish, C. E., "Brief Overview of the Activities of the NEA Project." *Gifted Child Quarterly*, 1969, 13, 116-118. (In Gowan and Torrance, *Educating the Ablest*. Itasca: Peacock, 1971.)

Clark, R. W., *Einstein: the Life and Times*. New York: World, 1971.

Cole, C. C., *Encouraging Scientific Talent*. New York: College Entrance Examination Board, 1956.

Concannon, Sr., J., "The Gifted: A Major Concern." *Peabody Journal of Education*, 1969, 46, 274-277.

Crow, L. D. and Crow A., *Educating the Academically Able*. New York: McKay, 1963.

Durr, W. K., "Let's Not Neglect the Gifted!" *Instructor*, 1970, 79, 58.

Feldman, D. H. and Bratton, J. C., "Relativity and Giftedness: Implications for Equality of Educational Opportunity." *Exceptional Children*, 1972, 38, 491-492.

Flanagan, J. C., "The Identification, Development, and Utilization of Human Talents." *Gifted Child Quarterly*, 1960, 4, 51-54, 58.

Flanagan, J. C., "Project Talent: Some Early Findings from a Nationwide Survey." *NEA Journal*, 1964, 53, 8-10.

Fliegler, L. A. and Bish, C. E., "The Gifted and Talented." *Review of Educational Research*, 1959, volume 29.

Freedman, R., *Teenagers Who Made History*. New York: Holiday House, 1961.

Frierson, E. C., "The Gifted." *Review of Educational Research*, 1969, 39, 25-37.

Gallagher, J. J. and Rogge, W., "The Gifted." *Review of Educational Research*, 1966, 36, 37-55.

Galton, F., *Hereditary Genius*. London: Macmillan, 1869 (Third Edition, 1914).

Getzels, J. W. and Jackson, P. W., "The Meaning of Giftedness—an Examination of an Expanding Concept." *Phi Delta Kappan*, 1958, 40, 75-77, (Also in Barbe and Renzulli, 1975).

Hill, T. B., "Whatever Happened to the Gifted?" *Educational Forum*, 1972, 36, 323-326.

Horwitz, E. L., "Educating the Gifted Child" *Gifted Child Quarterly*, 1974, 18, 17-21.

Justman, J., "Some Unmet Problems in the Education of the Gifted." *Exceptional Children*, 1960, 26, 436-441.

Klingler, C., "We're Wasting the Gifted!" *Today's Education*, 1969, 58, 86.

Laird, A. W. and Cangemi, J. P., "The Lost Ones—the Gifted." *Gifted Child Quarterly*, 1973, 17, 175-181.

Lombrosso, C., *The Man of Genius*. New York: Scribner, 1895.

Lyon, H. C. Jr., "Talent Down the Drain." *American Education*, 1972, 8, 13-16.

Magary, J. F. and Freehill, M. F., "Critical Questions and Answers Relating to School and Society in the Education of the Gifted." *Gifted Child Quarterly*, 1972, 16, 185-194.

Mead, M., "The Gifted Child in the American Culture of Today." *Journal of Teacher Education*, 1954, 5, 211-214. (Also in Barbe, *Psychology and Education of the Gifted*. New York: Appleton-Century-Crofts, 1965.)

Ming, R. W. and Gould, E. N., "Meeting the Needs of the Gifted." *Inside Education*, 1972, 59, 7-9.

Newland, T. E., "On Defining the Mentally Superior in Terms of Social Need." *Exceptional Children*, 1963, 29, 237-240.

Newland, T. E., "A Critique of Research on the Gifted." *Exceptional Children*, 1963, 29, 391-398.

Press, B. K., "Education of the Gifted in the U.S.S.R." *Exceptional Children*, 1964, 30, 241-244.

Snow, C. P., "Snow on Our Obligation to Gifted Children" *Instructor*, 1970, 79, 96-97.

Tannenbaum, A. J., "A Forewa d and Backward Glance at the Gifted." *The National Elementary Principal*, 1972, 51, 14-23. (Also in Barbe and Renzulli, 1975.)

Taylor, C. W., "The Highest Talent Potentials of Man." *Gifted Child Quarterly*, 1969, 13, *Education*, 1968, 57, 67-69.

Taylor, C. W., "The Highest Talent Potentials of Man." *Gifted Child Quarterly*, 1969, 13, 9-30.

Taylor, C. W., "Developing Effectively Functioning People—the Accountability of Multiple Talent Teaching." *Education*, 1973, 94, 99-111.

Terman, L. M., "A New Approach to the Study of Genius." *Psychological Review*, 1922, 29, 310-318. (Also in Barbe & Renzulli, 1975).

Terman, L. M., "The Discovery and Encouragement of Exceptional Talent." *American Psychologist*, 1954, 9, 221-230. (Also in Barbe & Renzulli, 1975).

Terman, L. M., Oden, M. H., and others. *Genetic Studies of Genius* series, published by Stanford University Press:

Vol. I - Mental and Physical Traits of a Thousand Gifted Children (1926)
Vol. II - The Early Mental Traits of Three Hundred Geniuses (1926)
Vol. III - The Promise of Youth (1930)
Vol. IV - The Gifted Child Grows Up (1947)
Vol. V - The Gifted Group at Mid Life (1959)

Thomasson, V., "Gifted Children in a Bind." *The Nation*, 1973, 217, 688-691.

Trezise, R. L., "Are the Gifted Coming Back?" *Phi Delta Kappan*, 1973, 54, 687-688, 692.

Ward, V. S., "Basic Concepts." (In: Barbe and Renzulli, 1975, 61-71.)

Ward, V. S., *Educating the Gifted: an Axiomatic Approach*. Columbus: Merrill, 1961.

Weyl, N. "The Potential Role of the Gifted in Underdeveloped Countries." *Gifted Child Quarterly*. 1970, 14, 29-35.

White, M. J., "The Case for Specifically Designed Education for the Gifted." *Gifted Child Quarterly*, 1970. 14, 159-162.

Recommend Projects and Activities

Note: For courses employing the point system for evaluation, recommended maximum point values are given in parentheses.

A. General Projects

1. After completing the Level A and B readings, you may wish to select any of the projects from the Basic Project List, page 16.
2. Read a biography of a famous artist, writer, musician, dramatic artist, inventor, or scientific prize-winner. Search for indications of the subject's attitudes or feelings about his or her school experiences, and for indications of how schools or teachers influenced the person's development. (3 points)
3. Develop a collection of jokes, anecdotes, or cartoons depicting the gifted, talented, or creative individual as stereotyped by other people in our society. (3 points)

B. Advanced Projects

1. Interview the principals of at least two schools in different school districts. Obtain information about their beliefs about the number of gifted and talented students in their schools, and the need to provide special educational programs for gifted, talented, or creative students. Seek specific evidence concerning what programs are conducted in the school and how they are implemented; review the evidence you obtain in comparison with Renzulli's "key features" (see Level B bibliography). (5 points)
2. Contact the State Department of Education in one or more states to determine: (a) the extent to which they provide program and/or financial assistance for school districts relating to the education of the gifted and talented; (b) policies concerning program approval and teacher certification for the gifted and talented; (c) legislative or policy trends concerning the gifted and talented. Review the responses you receive in relation to your readings. (5 points)

C. Major Projects

1. Plan and conduct a survey of your city, county, or state to investigate attitudes about the importance of creativity in education, or about the need for special educational provisions for the gifted and talented. (You may wish to focus upon specific aspects of these issues, such as the social desirability of creativity, the economic priority of such programs, the fairness of such programs for all students, etc.) Conduct your survey among at least two different groups (parents, teachers, counselors, school psychologists, administrators, school board members, etc.) Compare their responses with your beliefs, and with each other, and analyze your results on the basis of your readings. (7 points)
2. Find out as much as you can about the educational programs for the gifted, talented, and creative in another country. (Write to the country's nearest embassy or consulate to identify the educational officer with whom you should correspond.) Compare the historical pattern and current program in that country with the U. S. A. Attempt to analyze factors that may account for similarities and differences. (6 points)

3. Make a film, slide set, or fimstrip to illustrate (directly or abstractly) reasons for educators and parents to be concerned about creativity or the gifted and talented. Show the product to at least one group of people, discuss it with them, and analyze their reactions and feelings. (8 points)

Final Self-Quiz

1. On the basis of your reading and study, respond briefly to each of the following arguments:
   a) Programs for the gifted and talented reinforce the segregation of students.
   b) Special programs for the gifted and talented lead to the creation of an elitist group.
   c) Individualizing classroom instruction abolishes the need for programs for the gifted.
   d) What is good for the gifted is good for all children.
   e) Most of the children you teach will never do anything really creative, so we should not place undue emphasis on creativity in school.
   f) Most creative individuals are social misfits; the school's job should be to teach people to fit into society.
2. Identify and explain the impact of at least three factors which have historically influenced American educators' concern for providing for the gifted, and describe how these factors are present in our society today (if they are).
3. List and explain the five most important "key features" to consider in planning a program for the gifted and talented.
4. Identify at least three reasons for educators to be concerned with providing opportunities for all students to develop creative abilities.

Relation of Final Self-Quiz to Objectives and Readings

Self-Quiz Item	Objective	Readings
1	2, 3, 5	Kaplan (Level A); B (2, 5, 7, 11, 12)
2	1	Hildreth or Gold (Level A) B (8, 13)
3	4	Renzulli (B - 9); Kaplan (A)
4	5	(Level B, 2, 11, 12); Torrance (A)

TOPIC GU[illegible]

INTELLIGENCE – NATURE AND MEASUREMENT

Topic Organizer

Intelligence has had a special fascination for educators and psychologists for many years. What is it? What do you really mean when you talk about a person's intelligence? What kinds of behavior provide evidence of "intelligence"? Does a person's environment and experience influence his or her intelligence? How can differences in intelligence be identified among people of different ages? What are the strengths and weaknesses of "intelligence tests"? How is a knowledge of intelligence useful in teaching? How have our ideas about intelligence changed over the years?

Minimum Content Objectives

1. Explain briefly the major historical developments in the psychological study of the nature and measurement of intelligence, including the contributions of Galton, Binet, Terman, Stern, Thurstone, Spearman, Burt, Vernon, Cattell, Wechsler, Guilford, and Taylor.
2. Describe briefly the major components of each of the following conceptions of intelligence: Spearman's "g"; Thurstone's "primary mental abilities"; Cattell's "fluid and crystallized" intelligence; Guilford's Structure of Intellect and Taylor's "multi-talent approach."
3. Distinguish among three categories of intelligence measures (individual tests, group tests, and test batteries), defining and giving examples of each, and identifying the uses, advantages, and limitations of each.
4. Summarize the major arguments involved in each of the following controversial areas in the investigation of intelligence: (a) psychometric and theoretical adequacy of intelligence tests; (b) use and interpretation of test scores by employers, educators, and courts; (d) social and cultural biases in testing; and (d) genetic and evironmental bases of human intelligence.

Rationale

For years, "intelligence" has been one of the most frequently discussed topics among educators and psychologists. Despite our enthusiasm for talking about intelligence, however, it has remained difficult to understand; confusion and controversy have always accompanied the topic.

In this Topic, you will study theory and research on the nature of intelligence, and the closely-related problem of how intelligence is assessed. These two problems must logically be considered together. If we cannot

translate a definition into stable, measurable dimensions of human performance, it will have little value for us. On the other hand, the use of tests not derived from a sound analysis of the concept of intelligence would be trivial and misleading.

As you work on Objective 1, and study the historical development of our knowledge of intelligence and its assessment, you will see more clearly why intelligence has been so difficult for us to understand. You will see that early investigations in various countries followed quite different patterns (such as Galton's work in England, the work of Simon and Binet in France, the pioneering efforts of James McK. Cattell and Lewis Terman in the United States, and Spearman's work in the early 1900's in England.)

Today, very few psychologists hold that intellligence can be described adequately as a single, general factor (such as Spearman's "g"). As you begin to work on Objective 2, you will study many of the more complex views of intelligence that emerged during the 20th century. These developments include the multi-factor theories of Burt and Vernon, and later, the "Primary Mental Abilities" of Thurstone, Wechsler's emphasis on verbal and performance abilities, and more recent theories such as Cattell's "fluid and crystallized intelligence," Guildford's Structure of Intellect Model and Calvin W. Taylor's multiple talent approach. Despite the continued use of single scores (most commonly the "IQ" or "Intelligence Quotient") by educators, one of the most important implications of multi-factor theories of intelligence is that human intellect is comprised of many distinct or unique aptitudes which cannot be effectively summarized by a single index.

In studying Objective 3, you will review the development of several different kinds of testing procedures; ***individual tests***, such as the Stanford-Binet and the Wechsler; ***group tests***, which are very numerous and widely utilized in schools, and ***test batteries***, which stem from recent efforts to assess a variety of specific intellectual ability factors. You will study the advantages and limitations that are associated with the administration, scoring, and interpretation of each of these assessment procedures.

The entire field of defining and assessing intelligence continues to be the center of many intense controversies. Some are highly abstract, theoretical battles, while others involve complex statistical and methodological issues, and yet others involve biology, genetics, and a number of ethical or philosophical questions. Many of the controversies raise difficult questions, which may profoundly influence the practices of educators in the future. Objective 4 provides you with an opportunity to investigate these problems, including the validity of intelligence tests for predicting a student's success in "real world" situations, the problems of misunderstanding of test scores and misuse of scores by teachers, counselors, and other officials, cultural biases in testing, and the problems of the genetic and environmental bases of intelligence. These problems may become especially important in education, since we already are confronted by new pressures for restrictions on school testing, new legislation to reduce the likelihood of children being unfairly labelled by test scores, and increasing concern for the rights of the person to have access to information traditionally considered confidential in school records.

Pre-Test

1. Briefly identify in your own words the major contributions of each of the following scholars to psychological knowledge of the nature or measurement of intelligence;
   a) Galton
   b) Binet
   c) Terman
   d) Stern
   e) Thurstone
   f) Spearman
   g) Burt
   h) Vernon
   i) Cattell
   j) Wechsler
   k) Guilford
2. Name the aspects of intelligence considered by Thurstone's research to represent "primary mental abilities."
3. Define "fluid" and "crystallized" intelligence.
4. In Spearman's view of intelligence, what did "g" represent?
5. Listed below are the three dimensions of Guilford's Structure of Intellect Model. Name the categories included in each dimension.

Operations	**Contents**	**Products**
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____		_____
		_____

6. Number the following events (beginning with 1) from earliest to most recent:

   Development of standardized intelligence tests for group use _____

   Development of Guilford's multi-factor model of intelligence _____

   Development of individual assessment scales for intellectual verbal and performance factors _____

   Use of tests of simple aptitude factors in studying hereditary influences on exceptional talent _____

7. Name the major issues in the following controversial aspects of the psychological study of intelligence:
   a) Psychometric and theoretical adequacy of tests
   b) Use and interpretation of test scores
   c) Social and cultural biases in testing
   d) Genetic and environmental bases of intelligence

Bibliography

Level A

Blehler, R. F., *Psychology Applied to Teaching*. Boston: Houghton-Mifflin, 1974, 12. or

Gallagher, J. J., *Teaching the Gifted Child*. (Second Edition). Boston: Allyn and Bacon, 1975, 1 and 9. or

Gold, M. J., *Education of the Intellectually Gifted*. Columbus: Merrill, 1965, 3. or

Linden, K. and Linden, J. D., *Modern Mental Measurement: a Historical Perspective*. Boston: Houghton-Mifflin, 1968. or

Renzulli, J. S., *A Guidebook for Evaluation Programs for the Gifted and Talented*. Ventura (California) Ventura County Superintendent of Schools Office, 1975.

Level B

1. Guilford, J. P., "Three Faces of Intellect." *American Psychologist*, 1959, 14, 469-479. In: Barbe, W. B. and Renzulli, J. S. (1975) and numerous other anthologies. (Objectives 1 and 2).
2. Guilford, J. P., "Intellect and the Gifted." *Gifted Child Quarterly*, 1972, 16, 175-184, 239-243. (Objective 2.)
3. Horn, J. L., "Intelligence—Why It Grows, Why It Declines." *Trans-Action*, 1967, 5, 23-31. (Objective 2.)
4. Jensen A., "How Much Can We Boost IQ and Scholastic Achievement?" *Harvard Educational Review*, 1968-69 (Winter), 39, 1-123. (Objective 4.)
5. McClelland, D. C., "Testing for Competence Rather Than for 'Intelligence'." *American Psychologist*, 1973, 28, 1-14. (Objective 4.)
6. Rosenthal, R. and Jacobsen, L., "Teachers' Expectations: Determinants of Pupils' IQ Gains." *Psychological Reports*, 1966, 19, 115-118. (Objective 4.)
7. Taylor, C. W., "Be Talent Developers." *Today's Education*, 1968, 57, 67-69. (Objective 2.)
8. Taylor, C. W., "The Highest Talent Potentials of Man." *Gifted Child Quarterly*, 1969, 13, 9-30. (Objectives 1, 2.)
9. Thorndike, R., "Review of Pygmalion in the Classroom." *American Educational Research Journal*. 1968, 5, 708-711. (Objective 4.)
10. Thurstone, T. G., "Primary Mental Abilities of Children." *Educational and Psychological Measurement*, 1941, 1, 105-116. In: Barbe and Renzulli, 1975. (Objectives 1 and 2.)

Level C

Anastasi, A., "Heredity, Environment, and the Question, 'How'." *Psychological Review*, 1958, 65, 197-208.

Buros, O. K., (Ed.), *Seventh Mental Measurements Yearbook*. Highland Park, N. J.: Gryphon Press, 1972.

Burt, C., "The Structure of the Mind' A Review of the Results of Factor Analysis." *British Journal of Educational Psychology*, 1949, 19, 110-111 and 176-100. (Excerpted in Wiseman, 1967.)

Burt, C., "The Evidence for the Concept of Intelligence." *British Journal of Educational Psychology*, 1955, 25, 18-157.

Burt, C., *The Factors of the Mind*. London: University of London, 1940; (1, 2.)

Cattell, R. B., *Abilities: Their Structure, Growth, and Action*. Boston: Houghton-Mifflin, 1971.

Cattell, R. B., "A Culture Free Intelligence Test." *Journal of Educational Psychology*, 1940, 31, 161-179.

Cattell, R. B., "Some Theoretical Issues in Adult Intelligence." *Psychological Bulletin*, 1940, 38, 592.

Cattell, R. B., "The Measurement of Adult Intelligence." *Psychological Bulletin*, 1943, 40, 153-193.

Cattell, R. B., *The IPAT Culture Fair Intelligence Scales*. Champaign, Illinois: Institute for Personality and Ability Testing, 1965.

Ellis, K., et. al., *Intelligence and Cultural Differences*. University of Chicago Press, 1951.

Galton, F., *Hereditary Genius*. New York: Meridian Books, 1962, (Originally published in 1869 (Excerpted in Wiseman, 1967.)

Getzels, J. W. and Jackson, P. W., *The Study of Giftedness: A Multi-dimensional Approach*. In: Barbe and Renzulli, 1975, 99-110.

Guilford, J. P., *The Nature of Human Intelligence*. New York: McGraw-Hill, 1967.

Guilford, J. P. and Hoepfner, R., *The Analysis of Intelligence*. New York: McGraw-Hill, 1971.

Hoffman, B., *The Tyranny of Testing*. New York: Crowell-Collier, 1962.

Holt, J., *The Underachieving School*. New York: Pitman, 1969.

Horn, J. L., "Organization of Abilities and the Development of Intelligence." *Psychological Review*, 1968, 75, 242-259.

Horn, J. L. and Cattell, R. B., "Refinement and Test of the Theory of Fluid and Crystallized Intelligence." *Journal of Educational Psychology*, 1966, 57, 253-270.

Hunt, J. McV., *Intelligence and Experience*. New York: Ronald Press, 1961. (1, 4.) (Excerpted in Wiseman, 1967.)

McNemar, Q., "Lost: Our Intelligence? Why?" *American Psychologist*, 1964, 19, 871-882. (4.)

Spearman, C., *The Abilities of Man*. New York: Macmillian, 1927.

Terman, L. M., *The Measurement of Intelligence*. Boston: Houghton-Mifflin, 1916.

Terman, L. M. and Merrill, M. A., *Measuring Intelligence*. Boston: Houghton-Mifflin, 1937.

Terman, L. M. and Merrill, M. A., *Stanford-Binet Intelligence Scale* (Third Revision). Boston: Houghton-Mifflin, 1960.

Thurstone, L. L., *The Nature of Intelligence*. New York: Harcourt, Brace & World, 1926.

Thurstone, L. L., *Primary Mental Abilities*. Chicago: University of Chicago Press, 1938.

Thurstone, T. G., "Primary Mental Abilities of Children." *Educational and Psychological Measurements*, 1941, 1, 105-116. (Also in: Barbe and Renzulli, 1975.)

Tyler, L. E., (Ed.), *Intelligence: Some Recurring Issues*. New York: Van Nostrand, 1969.

Vernon, P. E., *The Structure of Human Abilities*. New York and London: Wiley (Methuen), 1950.

Wechsler, D., "Cognitive, Conative, and Non-Intellective Intelligence." *American Psychologist*, 1950, 5, 78-83.

Wechsler, D., *The Measurement and Appraisal of Adult Intelligence*. Baltimore: Williams & Wilkins, 1958.

Wiseman, S., *Intelligence and Ability*. Baltimore, Penguin, 1967.

Special references relating to the controversy over Jensen's work. (See also Jensen reference in Level B bibliography.) (Objective 4)

Jensen, A. R., "Social Class, Race, and Genetics: Implications for Education." *American Educational Research Journal*, 1968, 5, 1-42.

Jensen, A. R., *Genetics and Education*. New York: Harper and Row, 1972.

Responses to Jensen's original *Harvard Educational Review* article, written by Jerome S. Kagan, J. McV. Hunt, J. F. Crow, Carl Bereiter, David Elkind, Lee J. Cronbach, and W. F. Brazziel, were published in *Harvard Educational Review*, Spring, 1969, 39, 273-356.

Jensen responded to these in "Reducing the Heredity-Environment Uncertainty: A Reply." *Harvard Educational Review*, Summer, 1969, 39, 449-483.

Additional responses to Jensen's paper, by R. J. Light and P. V. Smith, A. L. Stinchombe, Martin Deutsch, F. S. Fehr, and several letters to the editors also appear in the Summer, 1969, issue.

Scriven M., "The Values of the Academy" (moral issues for American education and educational research arising from the Jensen case). *Review of Educational Research, 1970, 40 (4), 541-549.*

Professor Jensen also references 117 articles and published letters concerning his original paper in the bibliography of his 1972 book, *Genetics and Education*.

"Popular" and news reports include:

U. S. News and World Report, March 10, 1969.
Newsweek. March 31, 1969.
Time. April 11, 1969.
Science News. April 5, 1969.
New York Times Magazine. August 31, 1969.

The Preface of *Genetics and Education* (1972) also provides a detailed chronology of the controversy, and its major events, from Professor Jensen's personal point of view.

Another controversial issue, related also to Objective 4, focuses upon Rosenthal and Jacobson's research on teacher expectancies. Specific references on this issue include:

Rosenthal, R. and Jacobson, L., *Pygmalion in the Classroom*. New York: Holt, Rinehart & Winston, 1968.

Buckley, J. J., "Who is Pygmalion, which is Galatea?" *Phi Delta Kappan*, October 1968, 124.

Claiborn, W. L., "Expectancy Effects in the Classroom: A Failure to Replicate." *Journal of Educational Psychology*, 1969, 60, 337-383.

Fleming, E. S. and Anttonen, R., "Teacher Expectancy or My Fair Lady." *American Educational Research Journal*, 1971, 8, 241-252.

Gumpert, P. and Gumpert, C., "The Teacher as Pygmalion: Comments on the Psychology of Expectation." *Urban Review*, 1968, 3, 21-25.

Rothbart, M., Dalfen S., and Barrett, R., "Effects of Teacher Expectancy on Student-Teacher Interaction." *Journal of Educational Psychology*, 1971, 62, 49-54.

Snow, R. E., "Unfinished Pygmalion" (review). *Contemporary Psychology*, 1969, 14, 197-199.

Thorndike, R., "Review of Pygmalion in the Classroom." *American Educational Research Journal*, 1968, 5, 708-711.

(Rosenthal's response to Thorndike's review: "Empirical Versus Decreed Validation of Clocks and Tests." *American Educational Research Journal*, 1969, 6, 689-691; Thorndike's comment on the response: "But You Have To Know How To Tell Time." *American Educational Research Journal*, 1969, 6, 692.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended maximum point values for each project are given in parentheses.

A. General Projects

1. After completing the Level A and B readings, you may wish to select any of the projects or activities from the Basic Project List, page 16.
2. If you are employed by a school or college, it may also be possible for you to obtain copies and manuals for one or more group-tests of intelligence. Review one or more, and prepare a report in which you consider such questions as the comparability of the content of various group tests; the adequacy of the evidence supporting the validity and reliability of the tests; and the norm group for which standardization of the test was conducted. (One test: 2 points; more than one: 3 points)
3. Initiate a search of professional and general circulation magazines which publish cartoons or humorous articles. What assumptions are revealed in the content of such cartoons or articles concerning: (1) our beliefs about the nature of human intelligence. (2) our attitudes concerning the ability of educators to use test data effectively; (3) the revelance or applicability of intelligence tests to real life situations? (3 points)

B. Advanced Projects and Activities

1. Exercises involving the use of a "simulated" intelligence test battery may be found in Robert L. Morasky's ***Learning Experiences for Educational Psychology*** (Dubuque: William C. Brown Co., 1973, Unit 2, 31-56). (3 points)
2. Survey a sample of parents and educators to determine (a) their knowledge of Jensen's research on genetics and intelligence, and (b) their attitudes or opinions about Jensen's work. What correspondence do you find, if any, between knowledge and attitudes? How many in each group are unaware of the controversy or its main issues? What different reactions are observed among various respondents? (4 points)
3. Identify a public school district in your area and investigate its policies in relation to intelligence testing. Possible questions to explore include the following: Are tests used? Which test? How often? By whom administered and scored? To whom, and under what conditions, are results given? What is the basis for selecting tests, and how often is the policy reviewed? What use is made of test scores? What special procedures, if any, are employed in testing racial or ethnic minority students? (4 points)
4. What tests of intellectual ability or aptitude are employed by colleges and universities in your area to screen applicants for admission (undergraduate or graduate)? Inquire as to how the tests are selected, how the results are used, how policy is determined and reviewed, and what policies apply to special student populations (e.g., minorities). (4 points)

5. Your nearest college or university audio-visual center may have a copy of a recent film entitled, ***What Do I Know About Benny?*** This film is part of the Holt, Rinehart, and Winston series called "Critical Moments in Teaching." It raises many provocative questions about intelligence. After viewing the film, consider such questions as the following: What errors in understanding the nature of intelligence tests and test scores were made both by the teacher and the parent? What evidence is there of the development of expectancy biases in the behavior of the teacher? of the parent? Should teachers have access to test scores of their pupils? Should parents receive the same information? (2 points)

6. Select any of the models of human intelligence about which you have read in this unit, and describe the implications of that view for (a) curriculum planning and organization; (b) development of instructional materials or techniques. (4 points)

C. Major Projects

1. Under some conditions, it may be appropriate for you to learn more about intelligence by taking an actual adult intelligence test and examining your performance. Such testing should only be undertaken, of course, under the close supervision of a qualified psychological examiner. You may also be able to discuss with the examiner the content, scoring, and interpretation of the test. (5 points)

2. Obtain a copy of the American Psychological Association's ***Manual for the Construction and Use of Educational and Psychological Tests***. Review tests used in your school (or available for you to inspect) to determine the adequacy with which APA guidelines have been met. (4 points)

3. Many paperback books and pamphlets are available which purport to be "self-scoring" tests of intelligence. If you begin with a healthy skepticism about the psychological adequacy of such instruments, they may be interesting and instructive exercises. You might examine one or more, comparing their content and procedures and your reaction to answering the questions. You might also compare their content and procedures to APA guidelines for tests. (4 points)

Final Self-Quiz

1. Match the authors with their contributions:

Column 1: Authors			Column 2: Contributions	
1.	F. Galton	1. _____	a	hierarchial group factor theory
2.	L. Terman	2. _____	b.	Structure of Intellect
3.	A. Binet	3. _____	c.	fluid & crystallized intelligence
4.	W. Stern	4. _____	d.	author of Hereditary Genius
5.	L. L. Thurstone	5. _____	e.	advocate of two factor theory
6.	J. P. Guilford	6. _____	f.	Primary Mental Abilities
7.	P. Vernon	7. _____	g.	four-level hierarchy
8.	R. B. Cattell	8. _____	h.	American champion of Binet
9.	D. Wechsler	9. _____	i.	developed test for Paris schools
10.	C. Spearman	10. _____	j.	developed IQ index
			k.	developer of many widely-used American individual tests

2. Describe briefly the changes in our beliefs about the nature of human intelligence represented by the following progression of models: Spearman-Vernon-Thurstone-Guilford.
3. Describe the major types of intelligence tests (group, individual, and test batteries), identifying briefly the advantages and problems associated with each.
4. Describe what is meant by a "culture fair" test of intelligence, and explain briefly the major problems associated with the development of such tests.
5. Describe in your own words the principal conclusions of Rosenthal and Jacobson's studies of teacher expectancies, and the major criticisms of their research.
6. What are the critical problems confronting any researcher who attemps to investigate the relative contributions of genetic and envrionmental factors to intelligence? List at least four important problems, and explain each very briefly.

Relation of Final Self-Quiz to Objectives and Readings

Question	Objectives	Related Readings
1	1-3	Level A
2	2	Linden/Linden Book
3	3	Level A and Linden/Linden Book
4	4	Level A: Biehler
5	4	Level B: Rosenthal & Jacobsen; Thorndike
6	4	Refernces relating to Jensen in Level C; Level B article by Jensen

TOPIC GUIDE III:

INTELLECTUAL DEVELOPMENT

Topic Organizer

Through observation of children and adults, it is easy to recognize that many characteristics of people change with age. Many of these "developmental" changes profoundly alter the life of the person (e.g., sexual maturity during adolescence). What of that aspect of the person we call "intelligence"? Does our ability to use our mental capacities change with age? Are some abilities enhanced, while others remain stable or even decline? Do qualitively different abilities emerge as the person matures?

Minimum Content Objectives

1. Describe and compare in your own words the basic assumptions of Jean Piaget and Jerome Bruner concerning the factors which contribute to intellectual development.
2. Describe the typical competencies and limitations of intellectual functioning at several levels of development (i.e., during the sensori-motor, pre-operational, concrete operational, and formal operational periods), as described by Piaget and his co-workers.
3. Describe cognitive functioning at three levels (enactive, ikonic, and symbolic), as described by Bruner and his co-workers.
4. Compare the theories and evidence described by Bruner and Piaget with respect to (a) the course of intellectual development, and (b) the acceleration of cognitive development.
5. Describe the methods and experimental procedures which have been used by Bruner and Piaget (and their associates) and the implications of those methods for understanding the theories.
6. Identify several implications of theories of cognitive development (and the question of its acceleration) for classroom learning, instruction, or curriculum development.
7. Describe the results of longitudinal research concerning the growth and decline of measured intellectual abilities, and some of the implications of these findings for education.

Rationale

Many psychologists have been fascinated by questions regarding intellectual development. The theory and research in this area looms large in its implications for the educator. Studies of intellectual development may lead to extensive changes in our ideas about curriculum and instruction, instructional methods and materials, and in the organization of schools. In this Topic, you will have an opportunity to investigate the theories and the evidence, and to consider their implications for education. Our understanding

of the nature and growth of intelligence has been advanced significantly through the work of a Swiss scholar, Jean Piaget, and a prominent American psychologist, Jerome S. Bruner.

In Objectives 1 and 2, you will consider Piaget's view of the factors which contribute to cognitive development and the process of development through a series of complex periods or "stages" from infancy to maturity.

Piaget and his students have investigated cognitive development for several decades, although his work was largely overlooked in the United States until the early 1960s. The publication of J. McV. Hunt's ***Intelligence and Experience***, in 1961, is frequently cited as stimulating American interest in Piaget's work. Piaget's work is extensive, and his theories are sometimes complex, thus making difficult any brief summary of his ideas. Fortunately, many of his books and papers are available in widely-circulated English editions, and there are also numerous small books which provide surveys of his work (see Level B and C reference lists, below).

For Piaget, intellectual development not only involves what happens to the person, but also the person's active structuring of events and experiences, using increasingly complex and abstract processes or operations of thought. Intellectual growth proceeds through an orderly but uneven series of general periods. These can be described through characteristic ways and limitations of intellectual functioning, and generally, but certainly not strictly, in relation to age. In working on Objective 2, you will study Piaget's description of the person's progress through those periods.

In Objectives 1 and 3, you will study Bruner's approach to the same problem. In your reading for Objective 1, you will review Bruner's description of the factors which influence cognitive growth. In your reading for Objective 3, you will examine the theory and research of Bruner and his associates, describing their view of the process of cognitive development.

There are many similarities between Bruner and Piaget in their views on cognitive growth. These similarities involve their fundamental assumptions about the nature and causes of intelligence, the course of development, and the methods and procedures they employ in their studies. There are also some very important differences, however, many of which are particularly significant because of the different educational implications which result from them. In Objectives 4 and 5, you will compare closely their theories, methods, and research evidence, and in Objective 6, you will consider the implications of their work for education. These implications involve such issues as the nature and sequence of curricula for learners at various levels of cognitive development and the acceleration of intellectual growth.

In your work on Objective 7, you will study a ***psychometric*** approach to the question of intellectual development (i.e., a scientific investigation of the changes which occur in measured intelligence at various ages). The Berkeley Growth Study, which began in 1928, was one of the most extensive longitudinal studies of change in measured abilities. The results have suggested that, as a general rule, intellectual development continues later into adolescence or adulthood than had previously been recognized. The patterns of growth and decline with age vary, however, in relation to the specific abilities being measured.

Your study of intellectual development in this Topic will assist you in understanding the orderly, sequential process of change in human abilities over time. By learning about the nature of these changes and their sequence, you may be better able to provide instruction that is appropriate for the level of development of your students, and to take into account their strengths and limitations in intellectual functioning.

Pre-Instruction Self-Quiz

1. What are the basic factors which contribute to the intellectual growth? Identify ***four*** basic factors described by Piaget and ***six*** influences described by Bruner:

   Piaget: 1. _____
   2. _____
   3. _____
   4. _____

   Bruner: 1. _____
   2. _____
   3. _____
   4. _____
   5. _____
   6. _____

2. What are the principal defining characteristics of each of the following periods of intellectual development;

   (a) Bruner's period of ikonic representation

   (b) Piaget's formal operational period

   (c) Bruner's period of enactive representation

   (d) Piaget's pre-operational period

   (e) Piaget's concrete operational period

3. Name three principal areas of agreement in Bruner's and Piaget's theories of cognitive development.

4. Describe briefly the positions of Bruner and Piaget on the issue of the acceleration of cognitive growth.

5. It was long believed that intelligence grows during childhood and early adolescence, but begins to decline in the late teens. What does the evidence provided by longitudinal research on measured intellectual abilities have to say about this belief? In what ways might the response differ in relation to the abilities being considered?

Bibliography

Level A

Biehler, R. F., *Psychology Applied to Teaching*. Boston: Houghton-Mifflin, 1974, 3 and 4.

Level B

1. For Objectives 1, 2, 4-6: any one of the following (on Piaget's work):

   Flavell, J., *The Developmental Psychology of Jean Piaget*. New York: Van Nostrand, 1963.

   Furth, H. G., *Piaget for Teachers*. Englewood Cliffs- Prentice-Hall, 1970.

   Ginsburg, H. and Opper, S., *Piaget's Theory of Intellectual Development*. Englewood Cliffs: Prentice-Hall, 1969.

   Phillips, J. L., *The Origins of Intelligence: Piaget's Theory*. San Francisco: Freeman, 1969.

2. For Objectives 1, 3, 4-6: any one of the following (on Bruner's work):

   Bruner, J. S., "The Course of Cognitive Growth." *American Psychologist*, 1964, 19, 1-15.

   Bruner, J. S., et. al., *Studies in Cognitive Growth*. New York: Wiley, 1966, (especially ch. 1).

   Bruner, J. S., *Toward a Theory of Instruction*. New York: Norton, 1968, (especially ch. 1).

   Bruner, J. S., *The Relevance of Education*. New York: Norton, 1971, (especially ch. 2 and 3).

3. For Objective 7: any one of the following:

   Bayley, N., "On the Growth of Intelligence." *American Psychologist*, 1955, 10, 805-818. (Abridged version in Tyler, 1969; see Level C.)

   Bradway, K. P. and Thompson, C. W., "Intelligence at Adulthood: A Twenty-Five Year Follow-Up." *Journal of Educational Psychology*, 1962, 53, 1-14.

   Horn, J. L., "Intelligence-Why It Grows, Why It Declines." *Trans-Action*, 1967, 5, 23-31. In: Ripple, 1971.

Level C

Athey, I. J. and Rubadeau, D., (Eds.), *Educational Implications of Piaget's Theory*. Boston: Ginn, 1970.

Ausubel, D. P. and Ausubel P., "Cognitive Development in Adolescence." *Review of Educational Research*, 1966, 36, 403-413.

Bayley, N., "Some Increasing Parent-Child Similarities During the Growth of Children." *Journal of Educational Psychology*, 1954, 45, 1-21.

Bayley, N., "Consistency and Variability in the Growth of Intelligence from Birth to Eighteen Years." *Journal of Genetic Psychology*, 1949, 75, 165-196.

Bayley, N., "Data on the Growth of Intelligence Between 16 and 21 Years as Measured by the Wechsler-Bellevue Scale." *Journal of Genetic Psychology*. 1957, 90, 3-15.

Bradway, K. and Robinson, N. M., "Significant IQ Changes in Twenty-Five Years: A Follow-Up." *Journal of Educational Psychology*, 1961, 52, 73-79.

Duckworth, E., "Piaget Rediscovered." *Arithmetic Teacher*, 1964, 11, 496-499.

Elkind, D., *Children and Adolescence: Interpretive Essays on Jean Piaget*. New York: Oxford, 1970.

Elkind, D., "Piagetian and Psychometric Conceptions of Intelligence." *Harvard Educational Review*, 1969, 39, 319-337.

Elkind, D., "The Development of Quantitative Thinking: A Systematic Replication of Piaget's Studies." *Journal of Genetic Psychology*, 1961, 98, 37-46.

Elkind, D., "Piaget's Conservation Problems." *Child Development*, 1967, 38, 15-27.

Feldhusen, J. F., Treffinger, D. J., and Hobson, S., "The Effects of Visual and Verbal Stimuli on Divergent Thinking." *Gifted Child Quarterly*, 1975, 19(3), 205-209.

Furth, H. G., *Piaget and Knowledge*. Englewood Cliffs: Prentice-Hall, 1969.

Furth, H. G., *Piaget for Teachers*. Englewood Cliffs: Prentice-Hall, 1970.

Furth, H. G. and Wachs, T., *Thinking Goes To School*. New York: Oxford, 1974.

Goodnow, J. and Bethon, G., "Piaget's Tasks: The Effects of Schooling and Intelligence." *Child Development*, 1966, 37, 573-582.

Gruen, G. E., "Experiences Affecting the Development of Number Conservation in Children." *Child Development*, 1965, 36, 973-979.

Honzik, M. P., MacFarlane, J. W., and Allen L., "The Stability of Mental Test Performance Between Two and Eighteen Years." *Journal of Experimental Education*, 1948, 17, 309-324.

Hunt, J. McV., *Intelligence and Experience*. New York: Ronald Press, 1961.

Inhelder, B. and Piaget, J., *Growth of Logical Thinking from Childhood to Adolescence*. New York: Basic Books, 1958.

Inhelder, B. and Piaget, J., *The Early Growth of Logic in the Child*. New York: Harper & Row, 1964.

Isaacs, S., *Intellectual Growth in Young Children*. New York: Harcourt, Brace, 1930.

Piaget, J., *The Child's Conception of the World*. New York: Harcourt, Brace, 1929.

Piaget, J., *The Child's Conception of Number*. New York: Humanities Press, 1952.

Piaget, J., *The Language and Thought of the Child*. London: Routledge and Kegan Paul, 1952.

Piaget, J., *The Origins of Intelligence in Children*. New York: International Universities Press, 1952.

Piaget, J., "How Children Form Mathematical Concepts." *Scientific American* 1953, 189, 74-79.

Piaget, J., *Origins of Intelligence in Children*. New York: Norton, 1963.

Piaget, J., *The Construction of Reality in the Child*. New York: Basic Books, 1964.

Piaget, J., *The Science of Education and the Psychology of the Child*. New York: Grossman, 1970.

Piaget, J., *Six Psychological Studies*. New York: Random House, 1967.

Piaget, J. and Inhelder, B. *The Child's Conception of Space*. London: Routledge and Kegan Paul, 1963.

Piaget, J., Inhelder, B., and Szeminska, A., *The Child's Concept of Geometry*. New York: Basic Books, 1960.

Piaget, J. and Inhelder, B., *The Psychology of the Child*. New York: Basic Books, 1969.

Pulaski, M. A., *Understanding Piaget: An Introduction to Children's Cognitive Development*. New York: Harper & Row, 1971.

Rader, J. R., "Piagetian Assessment of the Conservation Skills in the Gifted First Grader." *Gifted Child Quarterly*, 1975, 19(3), 226-229.

Sharp, E., *Thinking is Child's Play*. New York: Dutton, 1969.

Sigel, L. E. and Hooper, R. H., *Logical Thinking in Children*. New York: Holt, 1968.

Tyler, L., (Ed.), *Intelligence: Some Recurring Issues*. New York. Van Nostrand, 1969.

Wadsworth, B. J., *Piaget's Theory of Cognitive Development*. New York: McKay, 1971.

Wohlwill, J. F. and Lowe, R. C., "Experimental Analysis of the Development of the Conservation of Number." *Child Development*, 1962, 33, 153-167.

Recommended Projects and Activities

Note: for courses employing the point system for evaluation, recommended maximum point values for each project are given in parentheses.

A. General Projects

1. After completing the Level A and B readings, you may wish to select any of the projects or activities from the Basic Project List, page 16.
2. Watch one or more children's television programs (***Sesame Street***, ***The Electric Company***, ***Zoom***, ***Captain Kangaroo***, ***Mr. Rogers Neighborhood***, etc.). Look for indications that the program is directing its efforts toward the child at some particular age or developmental level. To what extent can you find that the content or methods in the programs have been considered in the light of theory and research on cognitive development? (3 points)
3. Many toys are advertised by their manufacturers as being particularly suitable for specified age ranges. Examine a number of these toys, and attempt to determine the psychological bases, if any, for the purported age ranges. (3 points)

B. Advanced Projects

1. With individual children at selected age levels, conduct several of the "games" and activities described in Sharp's ***Thinking is Child's Play*** (New York: Dutton, 1969). (4 points)
2. Make a list of the intellectual characteristics and limitations of children at a particular age or level of development. Then, on the basis of that list, develop a set of experiments and activities which relate to the teaching of some subject area of interest to you. Compare your instructional plans to other instructional or curriculum projects you can find in the same subject area. (4 points)

C. Major Projects

1. Obtain the materials necessary for several Piagetian experiments, and read very carefully the descriptions of the experimenter's approach. Then conduct several of the experiments with one or two children at each of several age levels from three to fifteen. (2 points for each child at each age level.)
2. Conduct a case study of the intellectual development of young children at two or three different age levels. In addition to working with the child with some tasks from Bruner's or Piaget's approach, you might also include for comparison some other tests and inventories representing a more "psychometric" approach to intelligence. (You should not attempt to administer tests you are not qualified to use, of course.) (4 points for 2 age levels, 6 points for 3 age levels.)
3. Make a list of questions about human cognitive development which you feel have not been answered in your readings from this unit. Then, attempt to design some experiments or tasks which would give you information about those questions. Try out your experiments with a small group of children. Analyze your findings and the adequacy of your procedures. (6 points for questions, experiment and results.)

Final Self-Quiz

1. What are the assumptions made by Piaget and Bruner concerning factors which influence cognitive development? List Piaget's four basic assumptions and Bruner's six initial generalizations.
2. Describe two ways in which Piaget and Bruner agree about basic factors which influence the development of intelligence and one important way in which their viewpoints differ.
3. Complete the following chart (briefly):

Developmental Period	Principal Characteristics	Limitations
sensori-motor		
pre-operational		
concrete operations		
formal operations		

4. Name the three modes of representation described by Bruner and describe their implications for the cognitive functioning of the child.
5. Summarize the major arguments in support of acceleration of cognitive development (Bruner), and in opposition to such acceleration (Piaget).
6. A sarcastic wag once defined adulthood as "the time of life in which the body runs a race with the mind to see which will expire first." React to this statement on the basis of longitudinal studies of intellectual growth and decline.

Relation of Final Self-Quiz to Objectives and Readings

Post-Test	Objective	Related Readings
1	1	Level B, parts 1 and 2
2	1, 4	Level B, parts 1 and 2
3	2	Level B, part 2; Level A
4	3	Level B, part 1
5	4, 5	Level A and Level B, parts 1 and 2
6	7	Level B, part 3

UNIT II

The Gifted and Talented Topic Guides

TOPIC GUIDE IV:

CHARACTERISTICS OF THE GIFTED AND TALENTED

Topic Organizer

This topic is concerned with the personal characteristics that tend to be displayed by gifted and talented children and youth. Some of the important questions you will consider are the following: What are some commonly-held stereotypes of the characteristics of gifted and talented people? What does research indicate about the accuracy of such stereotypes? In what ways do the gifted and talented frequently differ from their less talented peers? What are some of the characteristics of which teachers and parents should be aware to recognize various kinds of talent?

Minimum Content Objectives

1. Describe the general findings of Terman and his associates in their longitudinal studies of the characteristics and behavior of gifted people.
2. Describe several commonly-held stereotypes concerning the characteristics of gifted and talented individuals, and evaluate their accuracy in light of research evidence.
3. Identify a general profile of the personal and behavioral characteristics of superior students in relation to learning characteristics, motivational characteristics, creativity characteristics, and leadership characteristics.
4. Describe the personal and behavioral characteristics associated with Taylor's six dimensions of talent (academic, creative, planning, communicating, forecasting, and decision making).
5. Given an extensive description or case study of a child or adolescent, identify any personal or behavioral characteristics which may indicate exceptional ability or talent.

Rationale

What are gifted and talented learners like as individuals? In what ways do they differ (in traits or typical behavior) from less able or talented persons? These questions are important to raise because they will help the parent or educator recognize such students and respond more effectively to their unique needs.

Our interest in the characteristics of the gifted and talented should not merely lead us to creating a convenient "label" to apply to such students. Instead, it should help us to recognize, and subsequently to take into account in instruction, the nature of the great differences which distinguish the gifted and talented from their peers.

Of course, educators should constantly make efforts to adapt instruction to account for the unique characteristics of every child. However, not only is this goal generally difficult to attain, in addition, we frequently hold many misconceptions about the characteristic traits and behavior of the gifted and talented that we may be unable to plan, without special study, instruction adequately for such students.

In your work on Objective 1, you will investigate some of the principal findings of one of the most extensive longitudinal studies of the gifted and talented ever conducted. Terman and his associates followed the lives of approximately one thousand exceptionally gifted persons from childhood through adulthood.

In Objective 2, you are asked to consider some common stereotypes about the charactersistics and behavior of the gifted and talented person, and to compare those with the results of research. Particularly on the basis of Terman's work, but also from many other sources, you will begin to see how many such stereotypes are partially or entirely inaccurate. You may also observe that effective education of the gifted and talented cannot be accomplished if incorrect impressions continue to influence the decisions of parents and educators.

In Objective 3, you will examine even more specifically some of the research-derived findings concerning the learning, motivational, creativity, and leadership characteristics of the gifted and talented, which provide additonal support for many of the earlier findings of Terman and others. These findings will also assist you in identifying specific characteristics and behaviors which you should be alert to recognize among the students with whom you have contact. Your recognition of these characteristics in a child may help pave the way for more effective and enjoyable educational experiences for that child, whose talent may otherwise have gone unnoticed and unrewarded.

In Objective 4, you will have an opportunity to consider the characteristics and behavior, not only of the intellectually or academically gifted student, but also of many other dimensions of talent. You will also learn how to modify instructional plans to give students new opportunities to express and develop their unique talents. School should not be a place where only one kind of talent is valued and encouraged.

Finally, in Objective 5, you will learn how to recognize the characteristics of the gifted and talented in the more complex situation of a case study or extensive description of a student's behavior. It may be one thing to remember a list of characteristics and behaviors, and quite a different thing to recognize them when they occur in "real life." By examining and analyzing some case descriptions, you should become better able to identify the significant characteristics of gifted and talented students.

Pre-Instruction Self-Quiz

1. Describe at least four common stereotypes about the traits or behavior of gifted and talented people, and explain briefly what research evidence suggests about each one.
2. Describe at least three principal results of the Terman longitudinal studies for each of the following periods: childhood personal characteristics, elementary school experiences, adolescence, early adulthood.
3. Name at least six personal and behavioral characteristics of superior students in relation to each of the following areas: learning ability, motivation, creativity, leadership.
4. Write a brief description of the distinguishing indicators of each of Taylor's six talent areas.

Bibliography

Level A

Hauck, B. B. and Freehill, M. F., *The Gifted-Case Studies*. Dubuque, Iowa: William C. Brown, 1972. or

Gallagher, J. J., *Teaching the Gifted Child*, (Second Edition). Boston: Allyn and Bacon, 1975, ch. 2. or

Gold, M. J., *Education of the Intellectually Gifted*. Columbus: Merrill, 1965, ch. 2. or

Hildreth, G. H., *Introduction to the Gifted*. New York: McGraw-Hill, 1966, ch. 4, 5.

Level B

1. Barbe, W. B., "Characteristics of Gifted Children." *Educational Administration and Supervision*, 1955, 41, 207-217.
2. Durr, W. K., "Characteristics of Gifted Children: Ten Years of Research." *Gifted Child Quarterly*, 1960, 4, 75-80. In: Gowan and Torrance, *Educating the Ablest*. Itasca: Peacock, 1971.
3. Fox, G. A., "The Gifted: How Are They Viewed?" *Gifted Child Quarterly*, 1968, 12, 23-33.
4. Gallagher, J. J., "Characteristics of Gifted Children: A Research Summary". In: Barbe and Renzulli, 1975, 127-150.
5. Kincaid, D. J., "A Study of Highly Gifted Pupils." In. Gowan, J. C. and Torrance, E. P., (Eds.) *Educating the Ablest*. Itasca, Ill: Peacock, 1971, 32-36.
6. Martinson, R. A., *The Identification of the Gifted and Talented*. Ventura (California) Ventura County Superintendent of Schools Office, 1974 (Especially 63-71, containing guidelines for developing a case study).
7. Oden, M. H., "The Fulfillment of Promise: 40-Year Follow-Up of the Terman Gifted Group." *Genetic Psychology Monographs*, 1968, 77, 3-93.
8. Renzulli, J. S., Hartman, R. K., and Callahan, C. M., "Teacher Identification of Superior Students." *Exceptional Children*, 1971, 38, 211-214 and 243-248.
9. Taylor, C. W., "Multiple Talent Teaching." *Today's Education*, March-April, 1974, 71-74.
10. Terman, L. M., "The Discovery and Encouragement of Exceptional Talent." *American Psychologist*, 1954, 9, 221-230. (Also in: Barbe and Renzulli, 1975)
11. Wood, F. H., "Individual Differences Count." *NASSP Bulletin*, January, 1973, 23-31.

Level C

Adler, M., "Reported Incidence of Giftedness Among Ethnic Groups." *Exceptional Children*, 1967, 34, 101-105.

Anastasliow, N. J., "A Report of Self-Concept of the Very Gifted." *Gifted Child Quarterly*, 1964, 8, 177-178.

Angelino, H. and Sheed, C. L., "Reactions to Frustration Among Normal and Superior Children." *Exceptional Children*, 1955, 21, 215-218.

Bachtold, L. M., "Interpersonal Values of Gifted Junior High School Students." *Psychology in the Schools*, 1968, 5, 368-370.

Batchold, L. M., "Changes in Interpersonal Values of Gifted Adolescents." *Psychology in the Schools*, 1969, 6, 302-309.

Barbe, W. B., "A Study of the Family Background of the Gifted." *Journal of Educational Psychology*, 1956, 47, 302-302-309. (Also in Barbe and Renzulli, 1975)

Bloom, B. S., *Stability and Change in Human Characteristics*. New York: Wiley, 1964.

Cornish, R. L., "Parents', Teachers' and Pupils' Perception of the Gifted Child's Ability." *Gifted Child Quarterly*, 1968, 12, 14-17

Cropley, A. J. and Field, T. W., "Achievement in Science and Intellectual Style." *Journal of Applied Psychology*, 1969, 53, 132-135.

Dauw, D. C., "Life Experiences of Original Thinkers and Good Elaborators." *Exceptional Children*, 1966, 32, 433-440.

Feldhusen, J. F., and Klausmeier, H. J., "Anxiety, Intelligence, and Achievement in Children of Low, Average, and High Intelligence." *Child Development*, 1962, 33, 403-409.

Fixx, J. F., "Brains". *Saturday Review*, April, 1973, 56-57.

Frierson, E. C., "Upper and Lower Status Gifted Children: A Study of Differences." *Exceptional Children*, 1965, 32, 83-90.

Gallagher, J. J., "Sex Differences in Expressive Thought of Gifted Children in the Classroom." *Personnel and Guidance Journal*, 1966, 45, 248-253.

Gallegas, A. M., "The Gifted Poor." *Educational Leadership*, 1973, 30, 749-753.

Gensley, J., "The Gifted Child in the Affective Domain." *Gifted Child Quarterly*, 1975, 19(4), 307-309.

Getzels, J. W. and Jackson, P. W., *Creativity and Intelligence*. New York: Wiley, 1962.

Goertzel, M. and Goertzel, V., "Sibling Supportiveness Among the Gifted." *Gifted Child Quarterly*, 1965, 9, 97-103.

Goertzel, V. and Goertzel, M., *Cradles of Eminence*. Boston: Little, Brown and Company, 1962.

Gowan, J. C., "Why Some Gifted Children Become Creative." *Gifted Child Quarterly*, 1971, 15, 13-18, and 35.

Gowan, J. C., "The Relationship Between Creativity and Giftedness." *Gifted Child Quarterly*, 1971, 15, 239-243.

Groth, N. J., "Achievement of Autonomy and Other Developmental Tasks in Bright and Average Adolescents." *Gifted Child Quarterly*, 1973, 17, 64-67.

Groth, N. J. and Holbert, P., "Hierarchial Needs of Gifted Boys and Girls in the Affective Domain." *Gifted Child Quarterly*, 1969, 13, 129-133.

Guilford, J. P., "Intellect and the Gifted." *Gifted Child Quarterly*, 1972, 16, 175-184 and 239-243.

Haggard, E. A., "Socialization, Personality and Academic Achievement in Gifted Children." *School Review*, 1957, 65, 388-414.

Halpin, W. G., Payne, D. A., and Ellett, C. D., "Biographical Correlates of the Creative Personality: Gifted Adolescents." *Exceptional Children*, 1973, 39, 652-653.

Halpin, W. G., Payne, D. A., and Ellett, C. D., "In Search of the Creative Personality Among Gifted Groups." *Gifted Child Quarterly*, 1974, 18, 32-33.

Hildreth, G. H., "Three Gifted Children: A Developmental Study." *Journal of Genetic Psychology*, 1954, 85, 239-262.

Hollingworth, L., *Children Above 180 IQ*. New York: Harcourt, Brace & World, 1942.

Hughes, H. H. and Converse, H. D., "Characteristics of the Gifted: A case for a Sequel to Terman's Study." *Exceptional Children*, 1962, 29, 179-183. In: Barbe, 1965.

Jensen, J. M., "Do Gifted Children Speak an Intellectual Dialect?" *Exceptional Children*, 1973, 39, 337-338.

Klausmeier, H. J. and Laughlin, L. J., "Behaviors During Problem Solving Among Children of Low, Average, and High Intelligence." *Journal of Educational Psychology*, 1961, 52, 148-152.

Klausmeier, H. J. and Check, J., "Retention and Transfer in Children of Low, Average, and High Intelligence." *Journal of Educational Research*, 1962, 55, 319-322.

Kough, J., *Practial Programs for the Gifted*. Chicago: Science Research Associates, 1960.

Laycock, F. and Caylor, J. S., "Physiques of Gifted Children and Their Less Gifted Siblings." *Child Development*, 1964, 35, 63-74.

Lehman, H. C., *Age and Achievement*. Princeton: Princeton University Press, 1953.

Lewis, W. D., "Some Characteristics of Very Superior Children." *Journal of Genetic Psychology*, 1943, 62, 301-309.

Levell, K. and Shields, J. B., "Some Aspects of a Study of the Gifted Child." *British Journal of Educational Psychology*, 1967, 37, 201-208.

Lloyd, B. C., Seghini, J. B., and Stevenson, G. *Igniting Creative Potential II*, Sandy, Utah: Jordan School District, 9361 South 400 East, 1974.

Lucito, L. J., "Independence–Conformity Behavior as a Function of Intellect: Bright and Dull Children." *Exceptional Children*, 1964, 31, 5-13.

Meeker, M., "Differential Syndromes of Giftedness and Curriculum Planning: A Four-Year Follow-Up." *Journal of Special Education*, 1968, 2, 185-196.

Malone, C. E., "Early Childhood Education of Gifted Children." *Gifted Child Quarterly*, 1974, 18(3), 188-190.

Naumann, T. F., "A First Report on Longitudinal Study of Gifted Pre-School Children." *Gifted Child Quarterly*, 1974, 18(3), 171-172.

Nichols, R. C. and Davis, J. A., "Characteristics of Students of High Academic Aptitude." *Personnel and Guidance Journal*, 1964, 42, 749-800.

Payne, D. A., Halpin, W. G., and Ellett, C. D., "Personality Trait Characteristics of Differentially Gifted Students." *Psychology in the Schools*, 1973, 10, 198-195.

"Project IMPLODE." *Igniting Creative Potential*. Salt Lake City: Bella Vista Elementary School, 2131 East 7000 South, 1971.

Ringness, T. A., "Identification Patterns, Motivation, and School Achievement of Bright Junior High School Boys." *Journal of Educational Psychology*, 1967, 58, 93-102.

Roe, A., "A Psychological Study of Physical Scientists." *Genetic Psychology Monographs*, 1951, 43, 123-235.

Roe, A., *The Making of a Scientist*. New York: Dodd, Mead & Company, 1952.

Roe, A., "A Psychologist Examines 64 Eminent Scientists." *Scientific American*, 1952, 187, 21-25. (Also In: Barbe, 1965.)

Schaefer, C. E., "A Psychological Study of 10 Exceptional Creative Adolescent Girls." *Exceptional Children*, 1970, 36, 431-441.

Simono, R., "Observed Expressions of the Achievement Needs of Gifted Students." *Psychology in the Schools*, 1967, 4, 174-176.

Smith, R. M. and Neisworth, J. T., "Creative Thinking Abilities of Intellectually Superior Children in the Regular Grades." *Psychological Reports*, 1966, 18, 335-341.

Torrance, E. P., "Creative Young Women in Today's World." *Exceptional Children*, 1972, 38, 597-603.

Torrance, E. P. and Dauw, D. C., "Aspirations and Dreams of Three Groups of Creatively Gifted High School Seniors and a Comparable Unselected Group." *Gifted Child Quarterly*, 165, 9, 177-182.

Torrance, E. P. and Dauw, D. C., "Attitude Patterns of Creatively Gifted High School Seniors." *Gifted Child Quarterly*, 1966, 10, 48-52.

Walberg, H. J., "A Portrait of the Artist and Scientist as Young Men." *Exceptional Children*, 1969, 36, 5-11.

Walberg, H. J., "Varieties of Adolescent Creativity and the High School Environment." *Exceptional Children*, 1971, 38, 111-116.

Wallach, M. A. and Wing, C. W., *The Talented Student*. New York: Holt, Rinehart, and Winston, 1969.

Watley, D. J., "Career Progress: A Longitudinal Study of Gifted Students." *Journal of Counseling Psychology*, 1969, 16, 100-108.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended values for each project are given in parentheses.

A. General Projects

1. After you have completed the Level A and B readings, you may wish to conduct any of the general projects in the Basic Project List, page 16.
2. Select a biography of an eminent person, or any of the case studies presented by Hauck and Freehill (1972), from the Level A readings, and prepare a written report relating to the case study to other readings you have completed concerning the characteristics and behavior of the gifted and talented. (3 points)
3. After reading the article by Wood and other Level B articles, develop a plan for implementing Wood's ideas for the gifted and talented student. (3 points)
4. View the film, "Understanding the Gifted" and prepare a report relating the characteristics of the students in the film to your reading. (3 points)

B. Advanced Projects

1. Working with a student who has been professionally identified as gifted or talented, plan and conduct a detailed, original case study. (Follow the guidelines suggested by Martinson in the Level B readings or obtain professional assistance in developing your own guidelines.) (5 points)
2. Using the ***Igniting Creative Potential*** guidelines (see "Project IMPLODE", 1971, and Lloyd, et. al., 1974 in Level C Bibliography) develop a plan for implementing multi-talent teaching based upon the characteristics described in Taylor's six talent areas. (5 points)

C. Major Projects

1. Select a personality trait or behavioral characteristic of particular interest to you. Conduct a search of the related literature on that characteristic among gifted, talented, and unselected groups, and prepare a review of the available evidence. (6 points)
2. Plan, conduct, and prepare a report on a research project involving the comparison of gifted and non-gifted students on some relevant characteristic or behavioral dimension. Your project may involve replication of a previously-reported study, an extension or modification of such a study, or the development of an original problem. (3 points for planning, 3 for conducting, and 3 for written report)
3. Prepare an original product (story, song, poem, play, artwork, film, etc.) to provide a description and/or interpretation of some aspect of the personal characteristics or behavior of the gifted and talented. Share your product with another group and discuss their reactions and feelings. (7 points)

Final Self-Quiz

1. Make a list of at least ***twenty*** characteristic traits or behaviors associated with the gifted individual and cite appropriate research to support your selections.
2. Describe the characteristics associated with each of the following areas of talent: academic, creative, planning, forecasting, communicating, and decision making.
3. Describe the major findings of Terman's longitudinal study of the gifted. Include at least three generalizations concerning childhood characteristics and behavior, adolescent characteristics, career choices, health and success during early and middle adulthood.
4. List at least four common misunderstandings about gifted and talented individuals, and prepare a brief argument to refute each.

Relation of Final Self-Quiz Questions to Objectives and Readings		
Question	Objective	Readings
1	1, 3, 5	Level A; B (1, 2, 5, 8, 10
2	4	Level B (9)
3	1	Level A; B (7, 10)
4	2	Level A; B (2, 3, 11)

TOPIC GUIDE V:

PROBLEMS OF THE GIFTED AND TALENTED

Topic Organizer

In addition to the problems and stresses that confront everyone, the gifted and talented learner may also have to deal with a number of special problems. In this Topic, you will investigate some of these unique issues. What are the problems of motivation and personal adjustment for the gifted student? How can you assit the student in solving his or her problems? Do gifted and talented women encounter special problems? What do we mean by "underachievement" and how can we deal with it? What special needs of the gifted and talented must be considered by counselors or school psychologists?

Minimum Content Objectives

1. Identify the nature of problems of motivation and adjustment which are faced by many gifted and talented students, and describe the conditions under which such problems are most likely to develop.
2. Describe a variety of ways for assisting gifted and talented students in overcoming problems of motivation and adjustment.
3. Define "underachievement," and identify this problem in actual case descriptions.
4. Describe several reasons for the problem of "underachievement."
5. Describe and illustrate several methods for working effectively with "underachieving" students.
6. Describe the special needs of the gifted and talented student for guidance and counseling.

Rationale

Although the gifted and talented generally are characterized by superior personal adjustment and mental health, curiosity, and a high degree of self-motivation and energy, we should not assume that their educational and personal lives are always trouble-free. In fact, the gifted and talented student must often confront a number of unique problems which stem quite directly from his or her own talents. It is important that parents and educators recognize these problems and learn how to help the person deal with them effectively, since failure to do so involves wasting what many consider to be our most valuable resource.

As you work on Objective 1, you will study the individual problems of the gifted and talented student in relation to motivation and personal adjustment. You will investigate the sources of such problems in the person, in relationships with peers and adults, and from the school situation. Frequently the problems encountered in school by gifted and talented students are related to specific problems of peer relationships, opportunities for leadership, or boredom with inadequate curricular or instructional provisions. Adjustment problems are frequently related to the attitudes of parents, peers, and teachers about talent, as well as to pressures toward rigid conformity and sanctions against "being different." In your work on Objective 2, you will review a variety of ways for helping students solve such problems and develop more effective patterns of individual and social behavior.

Objectives 3, 4, and 5 involve the nature and causes of "underachievement" and ways for educators to help underachieving students. Closely allied to problems of motivation and adjustment, underachievement is disturbing to parents, educators, and frequently to the students themselves. We must be certain, however, that the "underachiever" label does not merely become a "pigeon hole" in which we place students to be forgotten, an excuse for unsatisfactory work or hidden problem that causes us to overlook exceptional ability among some of our students. We should also exercise caution, so as to avoid overlooking talent among women as well as men, the poor as well as the affluent, and among the culturally different or economically disadvantaged. (The culturally different and the disadvantaged are the focus of Topic 7.)

In Objective 6, you will study the relationship of the special needs and problems of the gifted and talented to the role of the counselor and the school psychologist. These concerns include helping the gifted and talented student deal with the personal and social problems all students face, and with special problems, such as preparation for future educational and career choices. In addition, the counselor and the school psychologist must also be alert for indications of special problems such as learning disabilities, which can occur among gifted and talented as among any other students in the school population.

Pre-Instruction Self-Quiz

1. Describe several factors which influence the occurrence of each of the following problems among the gifted and talented:
   (a) motivation
   (b) personal adjustment
   (c) peer relationships
   (d) underachievement
2. For each of the problem areas in Question 1, describe at least one possible way of helping the student solve the problem.
3. Name at least two reasons for underachievement by gifted and talented elementary or secondary school students.
4. Describe at least two possible strategies the classroom teacher can employ to identify underachievers and to assist them.
5. Explain at least three kinds of problems of gifted and talented students which represent special problems for counselors or school psychologists.

Bibliography

Level A

Gallagher, J. J., *Teaching the Gifted Child*. (Second Edition). Boston: Allyn and Bacon, 1975, ch. 12. or

Gold, M. J., *Education of the Intellectually Gifted*. Columbus: Merrill, 1965, ch. 16. or

Hauck, B. B. and Freehill, M. J., *The Gifted-Case Studies*. Dubuque: William C. Brown, Co., 1972, (Especially ch. 3, 9, 10).

Level B

1. Feinberg, K., "Growing Up Gifted." *Gifted Child Quarterly*, 1970, 14, 172-173.
2. Gowan, J. C., "The Underachieving Gifted Child: A Problem for Everyone." *Exceptional Children*, 1955, 21, 247-249. (Also In: Barbe, 1965.)
3. Gowan, J. C., "Issues in the Education of Disadvantaged Gifted Children." *Gifted Child Quarterly*, 1968, 12, 115-119.
4. Grotberg, E. H., "Adjustment Problems of the Gifted." *Education*, 1952, 82, 472-476. (Also In: Barbe, 1965.)
5. Jordan, J. E. and Keith. J. P., "The Counselor's Role in Working with the Gifted." *Gifted Child Quarterly*, 1965, 9, 136-140. (Also In: Gowan and Torrance, 1971.)
6. Laird, A. W., "Are We Really Educating the Gifted Child?" *Gifted Child Quarterly*, 1968, 12, 205-214.
7. Renzulli, J. S., "Talent Potential in Minority Group Students." *Exceptional Children*, 1973, 39, 437-444.
8. Thom, D. A. and Newell, N., "Hazards of the High IQ." *Mental Hygiene*, 1945, 29, 61-77. (Also In: Barbe, 1965.)
9. Torrance, E. P., "Helping Gifted Children through Mental Health Information and Concepts." *Gifted Child Quarterly*, 1967, 11, 3-7. (Also In: Gowan and Torrance, 1971.)

Level C

Adler, M., "A Study of Attitudes Toward the Gifted Child as a Causal Factor in His Socio-Personal Adjustment." *Gifted Child Quarterly*, 1961, 5, 134-141.

Adler, M., "Reported Incidence of Giftedness Among Ethnic Groups." *Exceptional Children*, 1967, 34, 101-105.

Anderson, R. H., "Arousing and Sustaining the Interest of Gifted Children in the Study of Science." *Gifted Child Quarterly*, 1961, 5, 35-41, 46.

Ausubel, D. P., "Prestige Motivation of Gifted Children." *Genetic Psychology Monographs*, 1951, 43, 52-117.

Bachtold, L. M., "Personality Differences Among High Ability Underachievers." *Journal of Educational Research*, 1969, 63, 16-18.

Barbe, W. B. and Chambers, N. S., "The Adjustment of Gifted Children in Special Classes." *Gifted Child Quarterly*, 1964, 8, 32-35.

Baymur, F. B. and Patterson, C. H., "Three Methods of Assisting Underachieving High School Students." *Journal of Counseling Psychology*, 1960, 7, 83-90.

Besdine, M., "Mrs. Oedipus Has Daughters, Too." *Psychology Today*, 1971, 4, 62-65.

Borton, T., "What Turns Kids On." *Saturday Review*, April 15, 1967, 72-74.

Broedel, J., Ohlsen, N., Proff, F., and Southard, C., "Effects of Group Counseling on Gifted Underachieving Adolsecents." *Journal of Counsulting Psychology*, 1960, 103-170.

Bush, W. J. and Mattson, B. D., "WISC Test Patterns and Underachievers." *Journal of Learning Disabilities*, 1973, 6, 251-256.

Chopra, S. L., "A Comparative Study of Achieving and Underachieving Students of High Intellectual Ability." *Exceptional Children*, 1967, 33, 631-634.

Dement, A., "Good Students Want Counseling Too." *Journal of Counseling Psychology*, April, 1957, 124-128.

Drews, E. M., "Counseling for Self-Actualization in Gifted Girls and Young Women." *Journal of Counseling Psychology*, 1965, 12, 167-175.

Durr, W. K., "Let's Not Neglect the Gifted!" *Instructor*, April, 1970, 79, 58.

Dye, M. G., "Attitudes of Gifted Children Toward School." *Educational Administration and Supervision*, 1956, 42, 301-308.

Elkind, J., "The Gifted Child with Learning Disabilities." *Gifted Child Quarterly*, 1973, 96-97, 115.

Finney, B. C. and VanDalsem, E., "Group Counseling for Gifted Underachieving High School Students." *Journal of Counseling Psychology*, 1969, 16, 87-94.

Fixx, J. F., "Brains." *Saturday Review*, April, 1973, 56-57.

French, J. L., "Characteristics of High Ability Dropouts." *NASSP Bulletin*, 1969, 53, 67-69.

French, J. L., "The Highly Intelligent Dropout." *(In: Barbe and Renzulli, 1975, 431-432.)*

Frierson, E. C., "Upper and Lower Status Gifted Children: A Study of Differences." *Exceptional Children*, 1965, 32, 83-90.

Gallagher, J. J. and Crowder, T., "The Adjustment of Gifted Children in the Regular Classroom." *Exceptional Children*, 1957, 23, 306-312, 317-319.

Gallegos, A. M., "The Gifted Poor." *Educational Leadership*, 1973, 30, 749-753.

Gath, D., Tennett, G., and Pidduck, R., "Educational Characteristics of Bright Delinquents." *British Journal of Educational Psychology*, 1970, 40, 216-219.

Gensley, J., "The Gifted Child in the Affective Domain." *Gifted Child Quarterly*, 173, 17, 113-115.

Getzels, J. W., "Social Values and Individual Motives: The Dilemma of the Gifted." *School Review*, 1957, 65, 60-63. (Also In: Barbe, 1965.)

Gowan, J. C., "Dynamics of the Underachievement of Gifted Students." *Exceptional Children*, 1957, 24, 98-100.

Gowan, J. C., "The Education of Disadvantaged Gifted Youth." *California Journal of Instructional Improvement*, December, 1969, 239-251.

Gowan, J. C. and Bruch, C. B., *The Guidance of Gifted Children*. Boston: Houghton-Mifflin, 1971.

Gowan, J. C., Morrison, C., Groth, N. J., Pasternakk, M., and Drake, M., "New Aspects in Guiding the Gifted in Demonstration Classes." *Gifted Child Quarterly*, 1969, 13, 103-112. (Also In: Gowan and Torrance, 1971.)

Gross, F. P. and Sabatino, D. A., "Role of the School Psychologist in Evaluating an Experimental Program for Gifted Students." *Journal of School Psychology*, 1965, 3, 56-61.

Havighurst, R. J., "Conditions Favorable and Detrimental to the Development of Talent." *School Review*, 1957, 65, 20-26. (Also In: Barbe, 1965.)

Isaacs, A. F., "Looking at Why Giftedness is Rejected: Self-Identification, Self-Acceptance, and Self-Realization." *Gifted Child Quarterly*, 1969, 13, 32-36.

Joesting, J., "Why Must We Waste the Talents of One-Half of the Gifted?" *Gifted Child Quarterly*, 1970, 14, 252-254.

Joesting, J. and Joesting, R., "Future Problems of Gifted Girls." *Gifted Child Quarterly*, 1970, 14, 82-90.

Justman, J., "Personal and Social Adjustment of Intellectually Gifted Accelerants and Non-Accelerants in Junior High Schools." *School Review*, 1953, 61, 468-478. (Also In: Barbe, 1965.)

Karnes, M. B., McCoy, G., Zehrbach, R. R., Wollersheim, J. P., and Clarizio, H. F., "The Efficacy of Two Organizational Plans for Underachieving Intellectually Gifted Children." *Exceptional Children*, 1963, 29, 438-446.

Krippner, S. and Herald, C., "Reading Disabilities Among the Academically Gifted." *Gifted Child Quarterly*, 1964, 8, 12-20.

Krugman, M. and Impellizzeri, I., "Identification and Guidance of Underachieving Gifted Students in New York City." *Exceptional Children*, 1960, 26, 283-286.

Leese, J., "The Price of Oblique Thinking." *Gifted Child Quarterly*, 1974, 18(3), 163-167.

Meeker, M., "Differential Syndromes of Giftedness and Curriculum Planning: A Four-Year Follow-Up." *Journal of Special Education*, 1968, 2, 185-196.

Miller, T. M., "A Search for Talent in Economically Distressed Areas." *Gifted Child Quarterly*, 1964, 8, 179-180.

Miller, V., "Academic Achievement and Social Adjustment of Children Young for Their Grade Placement." *Elementary School Journal*, 1957, 57, 257-263.

Mink, O. G., "Multiple Counseling with Underachieving Junior High School Pupils of Bright-Normal and Higher-Ability." *Journal of Educational Research*, 1964, 58, 31-34.

Norman, R. D., Clark, B. P., and Bessemer, D. W., "Age, Sex, IQ, and Achievement Patterns in Achieving and Non-Achieving Gifted Children." *Exceptional Children*, 1962, 29, 116-123.

O'Shea, A. J., "Low-Achievement Syndrome Among Bright Junior High School Boys." *Journal of Educational Research*, 1970, 63, 257-262.

O'Shea, H. E., "Friendship and the Intellectually Gifted Child." *Exceptional Children*, 1960, 26, 326-335. (In: Barbe, 1965.)

Pippert, R. and Archer, N. S., "A Comparison of Two Methods of Classifying Underachievers with Respect to Selected Criteria." *Personnel and Guidance Journal*, 1963, 41, 788-791.

Purkey, W. W., "Project Self-Discovery: Its Effect on Bright But Underachieving High School Students." *Gifted Child Quarterly*, 169, 13, 242-246.

Roth, R. M. and Meyersburg, H. A., "The Nonachievement Syndrome." *Personnel and Guidance Journal*, 1963, 42, 535-540.

Ruth, S. and Richards, R., "Intellect vs. Feminity or Men Seldom Make Passes at Girls Who Wear Glasses." *Gifted Child Quarterly*, 1974, 18(3), 182-187.

Shaw, M. C. and McCuen, J. T., "The Onset of Academic Underachievement in Bright Children." *Journal of Educational Psychology*, 1960, 51, 103-108.

Thorne, A., "Creativity Plus Maturity." *Gifted Child Quarterly*, 168, 12, 43-46.

Tichenor, P., "Superstudent." *Gifted Child Quarterly*, 1970, 14, 126-127, 134.

Tisdall, W. J. and Birch, J. W., "The School Psychologist in a Program of Early Admission for Mentally Advanced Children" *Journal of School Psychology*, 1965, 3, 48-55.

Torrance, E. P., "Identifying the Creatively Gifted Among Economically and Culturally Disadvantaged Children." *Gifted Child Quarterly*, 1964, 8, 171-176.

Torrance, E. P., "Motivating the Creatively Gifted Among Disadvantaged Children." *Gifted Child Quarterly*, 1965, 9, 9-13.

Torrance, E. P., "Identify: The Gifted Child's Major Problem." *Gifted Child Quarterly*, 1971, 15, 147-155.

Torrance, E. P., "Is Bias Against Job Changing Bias Against Giftedness?" *Gifted Child Quarterly*, 1971, 15, 244-248.

Torrance, E. P., "Creative Young Women in Today's World." *Exceptional Children*, 1972, 38, 597-603.

Torrance, E. P., "Problems of Highly Creative Children." *Gifted Child Quarterly*, 1961, 5, 31-34. (Also In: Barbe and Renzulli, 1975.)

Watson, G. H., "Emotional Problems of Gifted Children." *Personnel and Guidance Journal*, 1960, 39, 98-105.

Weinstein, B., Mitchell, P., Schwartzstein, M., and Hirschborn, B., "The Adjustment of Children in a Suburban Community Who Were Accelerated in Elementary School." *Journal of School Psychology*, 1966, 5, 60-63.

Wellington, C. B. and Wellington J., *The Underachiever: Challenges and Guidelines*. Chicago: Rand-McNally, 1963.

Wiener, J., "Attitudes of Psychologists and Psychometrists Toward Gifted Children and Programs for the Gifted." *Exceptional Children*, 1968, 34, 354.

Witty, P. and Lehman, H. C., "Nervous Instability and Genius: Poetry and Fiction." *Journal of Abnormal and Social Psychology*, 1929. Vol, 24, 1. (Also In: Barbe, 1965).

Wilson, F. T., "Working With the Motives of Gifted Children." *Elementary School Journal*, 1957, 57, 247-252.

Wonderly, D. M. and Fleming, E. S., "Underachievement and the Intelligent Creative Child." *Exceptional Children*, 1965, 31, 405-409.

Wyne, M. D. and Skjei, P., "The Counselor and Exceptional Pupils: A Critical Review." *Personnel and Guidance Journal*, 1970, 48, 828-835.

Zilli, M. G., "Reasons Why the Gifted Adolescent Underachieves and Some of the Implications of Guidance and Counseling to the Problem." *Gifted Child Quarterly*, 1971, 15, 279-292.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended maximum point values for each project are given in parentheses.

A. General Projects

1. After completing the Level A and B readings, you may wish to select one or more of the general projects from the Basic Projects List, page 16.
2. Read the biography of a well-known gifted or talented person, and report on the problems described by that person during childhood and/or adolescence at home, with friends, or in school. Compare this description with the findings of research from your readings. (3 points)
3. After reading about problems of motivating gifted and talented students (and, if possible, after completing Topic 4 on Characteristics), develop a list of motivational factors that could be useful to the classroom teacher in working more effectively with such students. Be certain to show how your recommendations are clearly derived from your analysis of the characteristics and needs of the gifted and talented student. (3 points)

B. Advanced Projects

1. Discuss with a school psychologist or counselor the incidence of problems (individual, social, or learning problems) among high-ability students, and determine their responses to such problems. (You may also wish to investigate a special topic, such as the problems of minorities, disadvantaged students, or gifted women.) (4 points)
2. Interview or survey several teachers to determine their procedures for working with high-ability, underachieving students. Evaluate their responses in relation to the principles and suggestions you studied in your reading. Discuss with the teachers, if possible, any ideas you found in your reading that were not mentioned by the teacher during your interview and report their reactions. (5 points)
3. Interview several high-ability high school or college students and dropouts. Compare these students in relation to personal characteristics and problems, peer relationships, personal interests, goals, and long-term aspirations, and attitudes towards schools and teachers. Prepare a written or recorded summary of your results and conclusions. (5 points)

C. Major Projects

1. Identify a gifted or talented student who is encountering problems in school, and prepare an extensive case study, including conversations with parents, siblings, and peers; teachers, counselors, and other adults, as well as with the individual personally. Attempt on your report to describe factors which appear to be causing the problem, relationship of the problem to research evidence, and suggestions (of your own and others) for solving the problem. Discuss your conclusions with the student's teacher, if possible. (7 points)

2. Identify from school records (after obtaining necessary clearance and approval, of course) several students who were identified as being gifted or talented when they were in elementary school, but who are now high school age or older. Talk with their teachers to determine the history of their school experiences and problems. If possible, locate the students and discuss with them their feelings about their school experiences and future plans. (7 points)

Final Self-Quiz

1. Describe three factors which contribute to the problems faced by some gifted and talented students in relating successfully with their peers and teachers in school.
2. Describe at least three problems of personal adjustment faced by many gifted and talented individuals, and explain how each problem may be solved.
3. Define underachievement, and state at least three factors which contribute to underachievement by highly intelligent students.
4. Explain briefly at least three methods a classroom teacher can employ to help gifted or talented underachievers.
5. Describe briefly the special problems encountered by counselors and school psychologists in working with gifted and talented students.

Relation of Final Self-Quiz Questions to Objectives and Readings		
Question	Objective	Readings
1	1	Level A; Level B (1, 2, 6, 8, 9)
2	1, 2	Level A (Hauck); Level B (1, 2, 6, 8, 9)
3	3, 4	Level A (Hauck, Gold); Level B (2, 6, 8)
4	5	Level A; Level B (2, 6, 8)
5	6	Level B (3, 5, 7, 9)

TOPIC GUIDE VI:

IDENTIFICATION OF THE GIFTED AND TALENTED

Topic Organizer

In order to plan and implement special educational provisions for the gifted and talented, it is first necessary to establish procedures for identification and selection of such students. How can we determine which students are gifted or talented? What tests are available? What are their uses and limitations? What other valid and reliable criteria beside test scores can be used to identify the gifted and talented? How can procedures for screening and selection be established that will be fair to all students? How early can reliable identification occur?

Minimum Content Objectives

1. Describe the importance of identification procedures for the gifted and talented.
2. Describe five factors which frequently contribute to the inhibition or neglect of efforts at systematic identification of the gifted and talented.
3. Explain how expanded concepts of the nature of human abilities and talents have influenced procedures for the definition and identification of the gifted and talented.
4. Distinguish between ***screening*** and ***identification*** procedures.
5. Describe the screening measures and the assets and limitations of each of the following: teacher, parent, and peer nominations; group intelligence and achievement tests; pupil products; autobiographies and self-report inventories; creativity tests; expert judgments of creativity; and individual intelligence tests.
6. Describe the criteria for an adequate definition of the gifted and talented, and for adequate identification procedures, and explain the steps which should be included in formulating such procedures.

Rationale

There are many reasons for us to be concerned with the adequacy of our educational provisions for the most capable members of our society; the general importance of the potential contributions of the gifted and talented; and the need for adequate education for such individuals, was the focus of Topic I. Once the need for concern about the education of the gifted and talented has been established, however, we must deal with the difficult questions of ***definition*** and ***identification***.

There is abundant evidence that, throughout our country, we are not now doing a thorough job of identifying the gifted and talented, nor making sufficient educational provisions. Some estimates suggest that at least 75% of our country's gifted and talented children are not receiving any special attention. Vast numbers may also continue to go unrecognized throughout their school careers.

As you work on Objective 1, you will review many reasons for the importance of eliminating this neglect and improving our efforts at identification. In Objective 2, you will be concerned with establishing the principal factors which have contributed to the neglect of systematic efforts to identify gifted and talented students.

The problem of identifying the gifted and talented has also become more difficult for educators, as you will study in Objective 3, because our understanding of the nature of human abilities and talents has expanded very rapidly in the second half of the 20th century. (The psychological study of the nature and measurement of intelligence is the focus of Topic 2.) In Objective 3 of this unit, you will study how recent advances in our understanding of human intelligence (such as the study of creativity, Guilford's Structure of Intellect, and Taylor's multiple talent approach) have had strong, direct influences upon our efforts to define "giftedness" and to identify gifted and talented students.

Objectives 4, 5, and 6 concern the development and utilization of a variety of methods for identifying the gifted and talented as accurately as possible. After distinguishing between preliminary ***screening*** procedures and final ***identification*** (in Objective 4), many specific criteria and instruments will be considered.

Screening instruments, including group and individual tests, biographical and self-report data, and many types of ratings and behavioral indicators, will be reviewed as you work on Objective 5. You will also examine the assets and limitations of each of these screening procedures.

In Objective 6, you will study procedures for establishing a definition of the gifted and talented (as a basis for identification and selection decisions). You will also investigate criteria for assessing the adequacy of an identification plan. Finally, you will learn how to formulate and implement a complete set of adequate procedures for identification of gifted and talented students. Your final plan should utilize data from a wide range of sources, and represent a definition of giftedness and talent that builds accurately upon current knowledge.

Carefully planned identification and selection procedures are fundamental to the successful design, implementation, and evaluation of any educational program for the gifted and talented. This Topic will provide, therefore, an important base upon which your later efforts will depend for their success.

Pre-Instruction Self-Quiz

1. Explain in your own words why it is important to be able to identify gifted and talented students.
2. List five factors which contribute to the inhibition or neglect of systematic efforts to identify gifted and talented students.
3. List at least three ways in which recent knowledge of human intelligence (since 1950) has influenced the definition and identification of the gifted.
4. Explain the difference between screening procedures and identification procedures.
5. Name one asset and one limitation of each of the following instruments or procedures: teacher nominations; group intelligence tests; standardized achievement tests; autobiographies; and, expert judgments of creative ability.
6. Define the steps necessary for an adequate identification procedure for the gifted and talented, and indicate briefly your justification for the inclusion of each step.

Bibliography

Level A

Gallagher, J. J., *Teaching the Gifted Child*, (Second Edition). Boston: Allyn and Bacon, 1975, ch. 1. or

Gold. M. J., *Education of the Intellectually Gifted*. Columbus: Merrill, 1965, ch. 4. or

Hildreth, G. H., *Introduction to the Gifted*. New York: McGraw-Hill, 1966, ch. 2, 5, 6.

Level B

1. Gowan, J. C., "Identifying Gifted Students for a Program." *Accent on Talent*, 1967, 2, 1. (Also In: Gowan and Torrance, 1971).
2. Guilford, J. P., "Intellect and the Gifted." *Gifted Child Quarterly*, 1972, 16, 175-184, 239-243.
3. Martinson, R. A. *The Identification of the Gifted and Talented*. Ventura (California) Ventura County Superintendent of Schools Office, 1974.
4. Renzulli, J. S., Hartman, R. K., and Callahan, C. M., "Teacher Identification of Superior Students." *Exceptional Children*, 1971, 38, 211-214 and 243-248. (Also In: Barbe and Renzulli, 1975.)
5. Taylor, C. W., "Developing Effectively Functioning People—The Accountability of Multiple Talent Teaching." *Education*, 1973, 94, 99-111.
6. Torrance, E. P., "Broadening Concepts of Giftedness in the 70's." *Gifted Child Quarterly*, 1970, 14, 199-208.

Level C

Blosser, G. H., "Group Intelligence Tests as Screening Devices in Locating Gifted and Superior Students in the Ninth Grade." *Exceptional Children*, 1963, 29, 282-286.

Braga, J. L., "Analysis and Evaluation of Early Admission to School for Mentally Advanced Children." *Journal of Educational Research*, 1969, 63, 103-106.

Buros, O., *Seventh Mental Measurement Yearbook*. Highland Park, N. J.: Gryphon Press, 1972.

DeHaan, R. F., "Identifying Gifted Children." *School Review*, 1957, 65, 41-48.

Flanagan, J. C., "The Identification, Development, and Utilization of Human Talents." *Gifted Child Quarterly*, 1960, 4, 51-54, 58.

Flanagan, J. C., Dailey, J. T., Shaycroft, M., Borham, W., Orr, D. B., and Goldberg, I., *Design for a Study of American Youth*. Boston: Houghton-Mifflin, 1962.

Flanagan, J. C., "Project Talent: Some Early Findings from a Nationwide Survey." *NEA Journal*, 1964, 53, 8-10.

Flanagan, J. C. and Cooley, W. W., *Project Talent: One Year Follow-Up Studies*. Pittsburgh, Pa: University of Pittsburgh, 1965.

Fox, A. E., "Kindergarten: Forgotten Year for the Gifted?" *Gifted Child Quarterly*, 1971, 15, 42-48.

Garlock. J. C., "A Multiple Criterion for Including Pupils in a Gifted Program Based on Trivariate Distribution." *California Journal of Educational Research*, 1968, 19, 8 87-94.

Gensley, J. T., "A New Method of Evaluation for Gifted Students: A Diary of Learning." *Gifted Child Quarterly*, 1969, 13, 119-125.

Goslin, D. A., *The Search for Ability*. New York: Russell Sage Foundation, 1963.

Gowan, J. C., "Identification: Responsibility of Both Principal and Teacher." *Accent on Talent*. 1967, 2, 2, (Also In: Barbe and Renzulli, 1975.)

Gowan, J. C. and Bruch, C. B., *The Academically Talented Student and Guidance*. Boston: Houghton-Mifflin, 1971.

Granzin, K. L. and Granzin, W. J., "Peer Group Choice as a Device for Screening Intellectually Gifted Children" *Gifted Child Quarterly*, 1969, 13, 189-194.

Guilford, J. P., *The Nature of Human Intelligence*. New York: McGraw-Hill, 1967.

Guilford, J. P. and Hoepfner, R., *The Analysis of Intelligence*. New York: McGraw-Hill, 1971.

Hoepner, R. and O'Sullivan, M., "Social Intelligence and IQ." *Educational and Psychological Measurement*, 1968, 28, 339-344.

Jacobs, J. C., "Effectiveness of Teacher and Parent Identification of Gifted Children as a Function of School Level." *Psychology in the Schools*, 1971, 8, 140-142.

Jacobs, J. C., "Are We Being Misled by Fifty Years of Research on Our Gifted Children?" *Gifted Child Quarterly*, 1970, 14, 120-123.

Jacobs, J. C., "Teacher Attitude Toward Gifted Children." *Gifted Child Quarterly*, 1972, 16, 23-26.

Jarecky, R. K., "Identification of the Socially Gifted." *Exceptional Children*, 1959, 25, 415-419. (Also In: Barbe and Renzulli, 1975)

Keogh, B. K. and Smith, C. E., "Early Identification of Educationally High Potential and High Risk Children." *Journal of School Psychology*, 1970, 8, 285-290.

Khatena, J., "Something About Myself: A Brief Screening Device for Identifying Creatively Gifted Children and Adults." *Gifted Child Quarterly*, 1971, 15, 262-266, 292.

Kincaid, D., "A Study of Highly Gifted Elementary Pupils." *Gifted Child Quarterly*, 1969, 13, 264-267.

Kirk, W. D., "A Tentative Screening Procedure for Selecting Bright and Slow Children in Kindergarten." *Exceptional Children*, 1966, 33, 235-241.

Lazow, A and Nelson P. A., "Instant Answers: Testing the Gifted Child in the Elementary Schools" *Gifted Child Quarterly*, 1974, 18(3), 152-161.

Lesser, G. S., and others. "Identification of Gifted Elementary School Children with Science Talent." *Educational and Psychological Measurement*, 1962, 22, 349-364.

Levinson, B. M., "Rethinking the Selection of Intellectually Gifted Children." *Psychological Reports*, 1956, 2, 127-130.

Lynch, M. D. and Edwards, T. M., "The Miniscat: Its Development and Some Evidence of its Validity." *Educational and Psychological Measurement*, 1974, 34, 397-405.

Malone, C. E., "Potential Abilities: To Preserve and To Enhance." *Gifted Child Quarterly*, 1975, 19(2), 161-163.

Malone, C. E. and Moonan, W. J., "Behavioral Identification of Gifted Children." *Gifted Child Quarterly*, 1975, 19(4), 301-306.

Martinson, R. A., "Issues in the Identification of the Gifted." *Exceptional Children*, 1966, 33, 13-16.

Martinson, R. A., and Lessinger, L., "Problems in the Identification of Intellectually Gifted Children." *Exceptional Children*, 1960, 26, 227-231. (Also In: Barbe and Renzulli, 1975)

Meeker, M. N., "Identifying Potential Giftedness." *NASSP Bulletin*, 1971, 55, 92-95.

Newland, T. E., "On Defining the Mentally Superior In Terms of Social Need." *Exceptional Children*, 1963, 29, 237-240.

Payne, D. A. and Halpin, W. G., "Use of a Factored Biographical Inventory To Identify Differentially Gifted Adolescents." *Psychological Reports*, 1974, 35(3), 1195-1204.

Pegnato, C. and Birch, J. W., "Locating Gifted Children in Junior High Schools: A Comparison of Methods." *Exceptional Children*, 1959, 25, 300-304. (Also In: Barbe and Renzulli, 1975)

Porter, R. B., "A Reporting Procedure for Early School Admission for Mentally Advanced Children." *Journal of School Psychology*, 1971, 9, 127-130.

Rellas, A. J., "The Use of the Wechsler Preschool and Primary Scale (WPPSI) in the Early Identification of Gifted Students." *California Journal of Educational Research*, 1969, 20, 117-119.

Renz, P. and Christopolos, F., "Toward an Operational Definition of Giftedness." *Journal of Creative Behavior*, 1968, 91-96.

Renzulli, J. S., "The Identification and Development of Talent Potential Among the Disadvantaged." *Contemporary Education*, 1971, 42, 122-125.

Ruschival, M. L. and Way J. G., "The WPPSI and the Stanford-Binet: A Validity and Reliability Study Using Gifted Preschool Children." *Journal of Consulting and Clinical Psychology*, 1971, 37, 163.

Sattler, J. M., *Assessment of Children's Intelligence*. Philadelphia: Saunders, 1974.

Schmeding, R. W., "Group Intelligence Test Scores of Gifted Children: Degree of Consistency and Factors Related to Consistency." *Personnel and Guidance Journal*, 1964, 42, 991-996.

Silverstein, A. B., "WISC and WPPSI IQs for the Gifted." *Psychological Reports*, 1968, 22, 1168.

Sullivan, A. R., "The Identification of Gifted and Academically Talented Black Students: A Hidden Exceptionality." *Journal of Special Education*, 1973, 7, 373-379.

Torrance, E. P., "Are There Tops in Our Cages?" *American Vocational Journal*, 1963, 38, 20-22. (Also In: Barbe, 1965).

Torrance, E. P., and Khatena, J., "What Kind of Person Are You?" A brief screening device for identifying creatively gifted asolescents and adults. *Gifted Child Quarterly*, 1970, 14, 71-75. (Also In: Barbe and Renzulli, 1975.)

Wilson, C. D., "Using Test Results and Teacher Evaluation in Identifying Gifted Pupils." *Personnel and Guidance Journal*, 1963, 41, 720-721.

Zimmerman, I. L. and Woo-Sam, J., "The Utility of the Wechsler Preschool and Primary Scale of Intelligence in the Public School." *Journal of Clinical Psychology*, 1970, 26, 472.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended point values for each project are given in parentheses.

A. General Projects

1. After you have completed the Level A and B readings, you may wish to conduct any of the general projects in the Basic Project List, page 16.
2. Develop a written plan for screening and identification of gifted and talented students (for an actual or hypothetical educational program). Include specific information concerning the sources of information that would be utilized in your plan and how the data would be used for selecting students. (3 points)
3. Refer to Buros' ***Mental Measurement Yearbook*** (see Level C Bibliography) and prepare a summary of the strengths and weaknesses of several instruments which might be employed in screening or identifying gifted and talented students. (3 points)
4. Interview one or more school psychologist or guidance counselor to determine the nature and number of ratings and tests employed by their schools in identifying the gifted and talented. (3 points)

B. Advanced Projects

1. Contact your State Department of Education to determine what procedures, if any, they recommend school districts follow in identifying gifted and talented students. Review their response in relation to the assets and limitations of the procedures as described in your reading. (5 points)
2. Survey several public school Directors of Special Education to determine the procedures that are employed for identifying several kinds of exceptional students, including the gifted and talented. Compare the procedures used among the various areas, and prepare a report on your findings. (5 points)
3. Obtain copies of two or more instruments or rating scales which may be used as screening devices for locating gifted and talented students. Compare and contrast the instruments you review. Be especially alert for similarities and differences among procedures which purport to assess the same trait (e.g., compare several group intelligence tests; compare various assessments of creative ability; compare two or more standardized achievement tests). You may also wish to investigate the possible assets of limitations of the instruments for use with minority or disadvantaged students. (5 points)
4. Examine the identification procedures used by several schools or school districts with special educational provisions for the gifted and talented. Report on the similarities and differences among their procedures.

C. Major Projects

1. Select one or more instruments which purport to be useful in screening or identifying gifted and talented students; on the basis of your own extensive search of the literature (after consulting the test manual, and the Buros ***Mental Measurement Yearbook*** from the Level C Bibliography). Prepare a thorough evaluation of the validity, reliability, and usefulness of the instrument. (6 points)
2. Administer a variety of screening instruments to a sample of students and prepare a paper illustrating the number of students which would be identified as gifted or talented using each instrument and various combined scores. Determine which students would fail to be selected on various criteria, as well as the varying numbers of students selected by different criteria. Prepare a report assessing the usefulness of the criteria (singly and in various combinations). (8 points)

Final Self-Quiz

1. List the steps necessary for developing an adequate plan for identifying gifted and talented students.
2. Name five factors which frequently lead to neglect of systematic identification of the gifted and talented in school.
3. Name at least three changes that have taken place since 1950 in our understanding of human abilities and talent, and describe the implications of each change for identification of the gifted and talented.
4. Name at least six screening procedures commonly employed in locating gifted and talented students and describe the strengths and weaknesses of each one.

Relation to Final Self-Quiz to Objectives and Readings

Question	Objective	Readings
1	6	Level A; Level B (1, 2)
2	2	Level A; Level B (1)
3	3	Level A; Level B (3, 5, 6)
4	4, 5	Level A; Level B (1, 2, 4)

TOPIC GUIDE VII:

CULTURALLY DIFFERENT GIFTED AND TALENTED STUDENTS

Topic Organizer

Dream Deferred *

What happens to a dream deferred;
Does it dry up
like a raisin in the sun?
Or fester like a sore–
And then run?

Does it stink like rotten meat?
Or crust and sugar over–
like a syrupy sweet?
Maybe it just sags
like a heavy load.
Or does it explode?

Langston Hughes

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Minimum Content Objectives

1. Describe the barriers to effective educational provisions for culturally different gifted and talented students (including barriers in school programs, educational systems, the social environment, and decision-making processes in education).
2. Describe several problems associated with the identification of culturally different gifted and talented students.
3. Describe some special problems involved in constructing and implementing special education programs for disadvantaged and culturally different students.
4. Describe the unique personal characteristics associated with culturally different or disadvantaged gifted students. (Be certain to include assets as well as limitations.)
5. Describe the similarities and differences between disadvantaged and advantaged gifted and talented students in relation to behavioral traits, educational needs and interests, cognitive abilities (especially creative thinking), and home environments.
6. Describe at least two different illustrative educational programs for culturally different or disadvantaged children and youth and review their success. (Specify also the criteria of success for judging such programs.)

Rationale

In studying this Topic, you will be concerned with the special problems of identifying and providing more adequate instruction for culturally different gifted or talented students. "Culturally different" will include students from

a variety of racial, ethnic, or cultural groups in our society, as well as particular sub-groups who are not (in Gowan's phrase) in the "cultural mainstream." In addition, the economically disadvantaged are also included within the framework of this Topic.

One significant dimension of this problem relates to numerous barriers to providing effectively for the culturally different gifted and talented student. In your study for Objective 1, you will review barriers relating to school programs, educational systems, the social environment, and educational decision-making processes. You will learn to recognize specific ways in which the needs of the gifted, culturally different student are not being met, and to identify some of the specific factors which contribute to these problems.

The issue of ***identification***, which will be considered as you work on Objective 2, is also a very difficult problem. To what extent are the traditional procedures and instruments biased against culturally different students? (This concern, of course, also relates to the problems of cultural bias in intelligence testing, which is considered in Topic 2.) If so, we are overlooking a great many, very talented and gifted students throughout our country. You will review the arguments of many experts, in which this waste of talent is described and documented. You will also examine a variety of suggestions for a more unbiased and adequate set of procedures for identifying the culturally different gifted or talented student.

In Objective 3, you will review some of the unique personal characteristics associated with culturally different and disadvantaged students. Unfortunately, some educators have tended to describe disadvantaged or culturally different students entirely in negative terms, contrasting them unfavorably to "standard" cultural expectations. From your reading in this topic, however, you will see that there are many other, more positive and constructive ways to view the characteristics of the culturally different learner. In addition to identifying some limitations which may work to the student's disadvantage in the school setting, you will also review many positive attributes. Culturally different gifted and talented students may possess many unique strengths and abilties, which the educator must learn to recognize and use to advantage in planning and conducting instruction. In Objective 4, you will be able to extend your review of personal characteristics by comparing the similarities and differences among disadvantaged and advantaged learners in several areas: behavioral traits, educational needs and interests, creative thinking and other cognitive abilities, and home environments.

In Objective 5, you will review some of the special problems that are involved in planning and implementing educational programs for disadvantaged and culturally different gifted students. In Objective 6, you will be concerned with criteria for evaluating such programs and with illustrative programs that have been described in recent articles. These will include special instructional programs in public schools and local neighborhoods, as well as more extensive residential programs.

Through your study of this Topic, you should be better prepared to recognize the special problems and needs of the culturally different gifted or talented student, and you should be able to identify appropriate procedures for identifying and instructing these students.

Pre-Instruction Self-Quiz

1. Describe briefly at least one factor in each of the following areas that creates a barrier to the effective education of culturally different gifted and talented students: school programs, educational systems, social environment, and educational decision-making processes.
2. Name three reasons why traditional screening and identification procedures for the gifted and talented are limited in value for use with culturally different students.
3. Define at least five ways in which disadvantaged students commonly differ from their more advantaged peers.
4. Describe at least four criteria for the development of an adequate program for culturally different gifted and talented students.
5. Describe at least two special programs which have been developed to provide more effective educational opportunities for disadvantaged and culturally different gifted and talented students.

Bibliography

Level A

Gallagher, J. J., (Ed.), *Talent Delayed–Talent Denied*. Reston, Virginia: Foundation for Exceptional Children, 1974. (Conference report).

Gallagher, J. J., *Teaching the Gifted Child*. (Second Edition). Boston: Allyn and Bacon, 1975, ch. 13.

Gowan, J. C., "Issues in the Education of Disadvantaged Gifted Students." *Gifted Child Quarterly*, 1968, 12, 115-119.

Renzulli, J. S., "The Identification and Development of Talent Potential Among the Disadvantaged." *Contemporary Education*, 1971, 42, 122-125.

Level B

1. Gowan, J. C., "The Education of Disadvantaged Gifted Youth." *California Journal of Instructional Improvement*, December 1969, 239-251. (Also In: Gowan and Torrance, *Educating the Ablest*, 1971.)
2. Hampton, P. J., "Talent Among Disadvantaged Students." *Educational Forum*, 1974, 38(3), 321-326.
3. Passow, A. H., "The Gifted and the Disadvantaged." *National Elementary Principal*, 1972, 51, 24-31. (Also In: Barbe and Renzulli, 1975)
4. Renzulli, J. S., "Talent Potential in Minority Group Students." *Exceptional Children*, 1973, 39, 437-444. (Also In: Barbe and Renzulli, 1975)
5. Sato, I. S., "The Culturally Different Gifted Child–The Dawning of His Day." *Exceptional Children*, 1974, 40, 572-576.

Level C

Adler, M., "A Study of the Effects of Ethnic Origin on Giftedness." *Gifted Child Quarterly*, 1963, 7, 98-101.

Adler, M., "Reported Incidence of Giftedness Among Ethnic Groups." *Exceptional Children*, 1976, 34, 101-105.

Barbe, W. and Frierson, E., "Teaching the Gifted–A New Frame of Reference." (Also In: Barbe and Renzulli, 1975, 435-438)

Beilin, H., "The Utilization of High Level Talent in Lower Socio-Economic Groups." *Personnel and Guidance Journal*, 1956, 35, 175-178.

Bishop, W. E., "Characteristics of Teachers Judged Successfully by Intellectually Gifted High Achieving High School Students." (Also In: Barbe and Renzulli, 1975, 449-459)

Blank, M. and Soloman, F., "How Shall the Disadvantaged Child Be Taught." *Child Development*, 1969, 40, 47-61.

Bruch, C. B., "Modification of Procedures for Identification of the Disadvantaged Gifted." *Gifted Child Quarterly*, 1971, 15, 267-272.

Bruininks, R. H. and Feldman, D. H., "Creativity, Intelligence, and Achievement Among Disadvantaged Children" *Psychology in the Schools*, 1970, 7, 260-264.

Circirelli, V. G., "Educational Models for the Disadvantaged." In: Welberg, H. J. and Kapan, A. T., (Eds.), *Rethinking Urban Education*. San Francisco: Jossey-Bass, 1972, 31-48.

Coles, R., *Dead End School*, Boston: Atlantic-Little Brown, 1968.

Deutsch, M., Katz, I., and Jensen A. R., (Eds.), *Social Class, Race, and Psychological Development*. New York: Holt, Rinehart & Winston, 1968.

French, J. L., "The Highly Intelligent Dropout." In: Barbe and Renzulli, 1975, 431-432.

Frierson, E. C., "Upper and Lower Status Gifted Children: A Study of Differences." *Exceptional Children*, 1965, 32, 83-90.

Gallagher, J. J. and Rogge, W., "The Gifted." *Review of Educational Research*, 1966, 36, 37-55, (Especially 51-52).

Gallegos, A. M., "The Gifted Poor." *Educational Leadership*, 1973, 30, 749-753.

Gath, D., Tennent, G., and Pidduck, R., "Educational Characteristics of Bright Delinquents." *British Journal of Educational Psychology*, 1970, 40, 216-219.

Gruber, J. L., "Effects of Enriched Academic Environment on Scholastic Achievement of Culturally Deprived Pupils." *American Corrective Therapy Journal*, 1975, 29(2), 47-50.

Hauck, B. B. and Freehill, M. F., *The Gifted—Case Studies*. Dubuque: William C. Brown, 1972, (Especially 9 and 10).

Hellmuth, J., (Ed.), *Disadvantaged Child*. New York: Brunner/Mazel, 1970, (Vol. 3).

Iscoe, I. and Pierce-Jones, J., "Divergent Thinking, Age, and Intelligence in White and Negro Children." *Child Development*, 1964, 35, 785-797.

Jansen, V. G. and Gallagher, J. J., "The Social Choices of Students in Racially Integrated Classes for the Culturally Disadvantaged Child." *Exceptional Children*, 1966, 33, 221-226.

Joesting, J. and Joesting, R., "Differences Among Self-Description of Gifted Black College Students and Their Less Intelligent Counterparts." *Gifted Child Quarterly*, 1969, 13, 175-180.

Johnson, J. B., "Foundation for Exceptional Children Addresses the Needs of the Culturally Different Gifted Child." *Exceptional Children*, 1974, 40, 279-283.

Kozol, J., *Death At an Early Age*. Boston: Houghton-Mifflin, 1967.

Lynn, B., "Disadvantaged Gifted Progess in a New Residential School." *Gifted Child Quarterly*, 1968, 12, 18-22.

Nelson, J. B. and Cleland, D. L., "The Role of the Teacher of Gifted and Creative Children." In: Barbe and Renzulli, 1975, 439-448.

Passow, A. H., Goldberg, M., and Tannenbaum, A. J., (Eds.), *Education of the Disadvantaged—A Book of Readings*. New York: Holt, Rinehart, & Winston, 1967.

Quisenberry, N. L., "Developing Language Fluency in the Gifted Culturally Different Child." *Gifted Child Quarterly*, 1974, 18(3), 175-179.

Renzulli, J. S., "The Potential for Creativity Among Minority Groups." *University of Virginia Education Review*, 1969, 7, 59-62. (Also In: Barbe and Renzulli, 1975)

Rogers, D. W., "Visual Expression: A Creative Advantage of the Disadvantaged." *Elementary School Journal*, 1968, 68, 394-399.

Rosenberg, L. A., "Identifying the Gifted Child in the Culturally Deprived Population: The Need for Culture Fair Instruments." *American Journal of Orthopsychiatry*, 1967, 37, 342-343.

Sullivan, A. P., "The Identification of Gifted and Academically Talented Black Students: A Hidden Exceptionality." *Journal of Special Education*, 1973, 7, 373-379.

Tatham, C. B. and Tatham, E. L., "Academic Predictors for Black Students." *Educational and Psychological Measurement*, 1974, 34, 371-374.

Taylor, C. W., "Cultivating New Talents: A New Way to Reach the Educationally Deprived." *Journal of Creative Behavior*, 1968, 2, 83-90. (Also in Barbe and Renzulli, 1975)

Torrance, E. P., "Are the Torrance Tests of Creative Thinking Biased Against or In Favor of Disadvantaged Groups?" *Gifted Child Quarterly*, 1971, 15, 75-80.

Torrance, E. P., "Creative Positives of Disadvantaged Children and Youth." *Gifted Child Quarterly*, 1969, 13, 71-81. (Also In: Gowan and Torrance, 1971)

Torrance, E. P., "Creative Teaching Makes a Difference." In: Gowan, J. C., Demos, G., and Torrance, E. P., *Creativity: Its Educational Implications*. New York: Wiley, 1967. (Also In: Barbe and Renzulli, 1975)

Torrance, E. P., "Finding Hidden Ta'ents Among Disadvantaged Children." *Gifted Child Quarterly*, 1968, 12, 131-137.

Torrance, E. P., "Readiness of Teachers of Gifted to Learn From Culturally Different Gifted Children." *Gifted Child Quarterly*, 1974, 18(3), 137-142.

Torrance, E. P., "Training Teachers and Leaders To Recognize and Acknowledge Creative Behavior Among Disadvantaged Students." *Gifted Child Quarterly*, 1972, 16, 3-10.

Torrance, E. P., "What Gifted Disadvantaged Children Can Teach Their Teachers." *Gifted Child Quarterly*, 1973, 17, 243-249.

Torrance, E. P. and Torrance, P., "Combining Creative Problem Solving with Creative Expressive Activities in the Education of Disadvantaged Young People." *Journal of Child Behavior*, 1972, 6, 1-10.

Vairo, P. D. and Whittaker, F., "Needed Learning Tools for the Deprived Child." *Peabody Journal of Education*, 1967, 45, 121-123.

Valentine, C. A., "Deficit, Difference, and Bicultural Models of Afro-American Behavior." *Harvard Educational Review*, 1971, 41, 137-157.

Wolfe, D. P., "Curriculum Adaptations for the Culturally Deprived." *Journal of Negro Education*, 1962, 31, 139-151.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended point values for each project are given in parentheses.

A. General Projects

1. After completing the Level A and B readings, you may wish to select any of the projects or activities from the Basic Project List, page 16.
2. Talk with the teachers and/or principals of several schools in areas enrolling many disadvantaged students or students from several different cultural backgrounds. Investigate whether there are any specific provisions of the identification and instruction of their gifted and talented students. If there are, determine what is done and the procedures for selecting students. If not, determine why such provisions are not made. (3 points)
3. Visit a local Head Start or Follow Through program to determine what efforts, if any, are made to identify and provide for gifted and talented students who are disadvantaged or from different cultural groups. (3 points)
4. View the film ***No Reason to Stay***, if it is available, and report on your reactions in relation to the special problems of identifying and educating the gifted and talented student. (2 points)

B. Advanced Projects

1. If it is possible for you to observe, personally, a person from a disadvantaged or different cultural background who has been identified as gifted or talented, and if you can obtain the necessary data, conduct a detailed case study involving personal characteristics; behavior in school, at home, and at play; family background and relationships; goals and aspirations; and problems. (5 points)
2. On the basis of your readng and study, plan a unit of instruction designed specifically for use with the culturally different gifted student. Show specifically in your plan how your decisions and procedures are based upon particular concepts relating to the culturally different student. (5 points)

C. Major Projects

1. For a particular group of culturally different or disadvantaged students you select, attempt to develop a plan for screening and identifying the gifted and talented individuals within this group. Describe your procedures (including specification of criteria for ratings and tests to be used) in detail, and show how your decisions are derived from your reading. (6 points)
2. Select any aspect of the screening or identification procedures used in a program for the gifted and talented, in any school district, and review it carefully in relation to possible advantages or limitations for use with culturally different or disadvantaged students. Include in your review a detailed analysis of the characteristics of the students for whom the procedure or test would (or would not) be appropriate. (If a procedure from an actual school program is not available to you, you may select any set of instruments commonly utilized in such programs.) (5 points)

3. Interview a group of teachers of culturally different and disadvantaged students and attempt to determine their attitudes about the gifted and talented. Compare their responses with the attitudes of other teachers who do not work with disadvantaged students. (5 points)
4. Arrange to participate in a school, pre-school, or day care center for culturally different or disadvantaged students. Your participation should include working with the staff in planning special instructional provisions for the gifted and talented students, planning for the identification of such students, and carrying out some instructional units with the students that are identified. Report on the correspondence between your experiences and the reading you have done for this topic. (7 points)

Final Self-Quiz

1. Name at least three special programs for culturally different or disadvantaged gifted and talented students, and describe each briefly (one or two sentences each).
2. Name at least five ways in which gifted culturally different and disadvantaged students differ in characteristics, interests, background, and behavior from other gifted students.
3. Identify the potential advantages or limitations of each of the following instruments and procedures for identifying gifted and talented disadvantaged students: Stanford-Binet IQ; verbal IQ from group tests; teacher's nomination; figural creative thinking ability.
4. On the basis of your knowledge of the characteristics of the gifted student from a disadvantaged or culturally different background, describe a procedure you could recommend for adequate initial screening and identification of students.
5. If you were working on the development of a program for gifted, disadvantaged children in a large public school system, name at least four problems you would expect to have to overcome.

Relation of Final Self-Quiz to Objectives and Readings		
Question	Objective	Readings
1	6	Level A (2); Level B (1, 2)
2	3-5	Level A (1-2); Level B (1-5)
3	2	Level A (2-3); Level B (2-5)
4	3-5	Level A (3); Level B (2-5)
5	1	Level A (1); Level B (1)

TOPIC GUIDE VIII:

INSTRUCTIONAL PROCEDURES FOR THE GIFTED AND TALENTED

Topic Organizer

No matter how adequate a program's philosophy, goals, or organizational arrangement is, most of its eventual success or failure will depend upon the way instruction is actually conducted. What role should the teacher play in improving the educational experiences of gifted and talented students? What methods, techniques, or approaches are especially well-suited for gifted and talented students? What special skills of instructional design will the teacher of the gifted and talented need?

Minimum Content Objectives

1. Describe the special considerations which should be made by the teacher in planning or designing instruction on the basis of the unique characteristics of gifted and talented students.
2. Describe the special consideration which should be made in designing instruction for students who are talented in any of several different areas (e.g., creative. leadership, forecasting, communicating, or decision making, in addition to academic talent).
3. Describe several steps the classroom teacher can take to insure that instruction for the gifted and talented involves complex cognitive and affective instructional goals and objectives.
4. Describe several steps the teacher can take to provide a variety of alternative individualized, learning procedures for the gifted and talented (including problem solving, discovery or inquiry, games and stimulations, and research skills).
5. Describe several steps the teacher can take in helping gifted and talented students become better able to manage and direct their own learning experiences.
6. Describe several steps that the teacher can take in helping gifted and talented students recognize, analyze, and evaluate their own individual and social preferences, attitudes, and values.

Rationale

More than any other topic, this one is directly and immediately concerned with the day-to-day exchange between the teacher and the learner. No educational program, regardless of how carefully planned or soundly conceived, can be successful unless the actual instruction in it is conducted effectively. Effective instruction can enhance the most mediocre

of curricula; ineffective instruction can ruin our most imaginatively prepared programs. Therefore, when it comes down to basic issues, we have to be concerned with the ordinary, every day exchanges among teachers and students.

In addition, if educational provisions for the gifted and talented are to be adequately differentiated from programs of instruction for other students, the curriculum developer and the classroom teacher must have a unique set of skills. They must be able to design instructional programs which are accurately tailored to the personal needs and characteristics of the gifted and talented. In Objective 1 for this topic, you will review the characteristics of the gifted and talented which have particular relevance in planning instructional materials. (It would be helpful, but not necessarily essential, for you to have studied Topic 4 before beginning work on this Topic.) An alternative procedure is to develop differentiated instructional approaches or programs for several different groups of talented students, as suggested by Taylor's multi-talent teaching approach. This procedure will be the focus of your work on Objective 2 for this Topic.

Although many teachers frequently resist or ignore admonitions to plan instruction using specific (or "behavioral") objectives, our conclusion is that such planning is essential for preparing effective instruction for the gifted and talented. Through the utilization of explicit objectives, carefully planned and analyzed, it becomes possible to design instruction in which the goals, objectives, and learning activities incorporate complex cognitive and affective outcomes. Thus, as you work on Objective 3, you will study ways of planning instructional objectives for the gifted and talented that will help learning extend significantly beyond the levels of memorization and comprehension.

It is not enough, however, to plan complex objectives for gifted and talented students. Effectively differentiated instructional procedures must also incorporate a variety of alternatives through which the students can attain the objectives. As you work on Objective 4, you will review several approaches which can be particularly useful in designing alternatives for the gifted and talented; these include problem solving, discovery, inquiry, research skills, and the utilization of games and simulations in the classroom for the gifted and talented.

While many educators are concerned with helping children learn in ways that will be useful outside of school, the appropriateness of a concern for self-directed learning may nowhere be greater than for the gifted and talented. Many considerations point to the need to differentiate instruction for the gifted and talented through more systematic efforts at fostering self-direction or self-management. As you work on Objective 5, you will investigate procedures for attaining these goals.

The education of the gifted and talented must also contain adequate provision for instruction in the areas of social relations, preferences, attitudes, and values. Gifted and talented students are frequently very concerned with their relationships with peers (in and out of school) and with adults. They are also senstivive to questions of attitude or values, and are not content just to deal with obvious "facts", opinions, or arbitrary justifications. As you work on Objective 6, you will examine ways in which to provide instruction more effectively for these complex, affective goals among gifted and talented students.

This is a very wide-ranging topic, of course, so some fundamental questions have been omitted or surveyed only very superficially. If you do not already have some background in educational or instructional psychology, with an emphasis on learning processes and instructional design (writing behavioral objectives, using the cognitive and affective taxonomies, etc.), you may need to do some additional background study. (To assist you in such efforts, consult Treffinger, D. J. and Davis, J. K., ***Educational Psychology: A Self-Directed Course of Study***. Minneapolis: Burgess, 1971, and any of several introductory educational psychology textbooks.)

In this Topic, you will have an opportunity to study in detail some of the specific areas in which the teacher ***must*** be prepared to invest a great deal of time and energy to design effective, qualitatively differentiated instruction for the gifted and talented.

Pre-Instruction Self-Quiz

1. Describe at least three unique personal characteristics frequently observed among gifted and talented students and illustrate how instruction might be specifically designed to take those characteristics into account.
2. Describe specific instructional provisions which can be developed to meet the special needs of talented students in each of these areas: leadership, forecasting, communicating, and decision making.
3. Write examples of instructional objectives for gifted and talented students which involve application, analysis, synthesis, and evaluation, rather than merely knowledge and comprehension.
4. In relation to the topic, "Metric Measurement", give examples of a variety of instructional procedures which would be particularly appropriate for use with gifted and talented students.
5. Describe specific experiences which can be provided by the classroom teacher to help gifted and talented students learn to manage and direct their own learning. Include steps concerning goals and objectives, diagnosis and prescription, planning and conducting instructional procedures, and evaluation of performance.
6. Describe at least three ways in which the teacher can assist gifted and talented students recognize and deal effectively with problems relating to personal relationships, attitudes, and values. (Include illustrations of specific activities.)

Bibliography

Level A

Gallagher, J. J., *Teaching the Gifted Child*. (Second Edition), Boston: Allyn and Bacon, 1975, ch. 4, 5, 6, 7. or

Gold, M. J., *Education of the Intellectually Gifted*. Columbus: Merrill, 1965, ch. 8-12, 17. or

Hildreth, G. H., *Introduction to the Gifted*. New York: McGraw-Hill, 1966, ch. 8, 9, 12, 13, 16-18. or

Kaplan, S. N., *Providing Programs for the Gifted and Talented: A Handbook*. Ventura (California), Ventura County Superintendent of Schools Office, 1974, 93-195.

Level B

1. Dunn, H. C., "Gifted Children Find Research Can Be Fun." *Gifted Child Quarterly*, 1968, 12, 10-13.
2. Dunn, K. and Dunn, R., "Sixty Activities That Develop Student Independence." *Learning*, February, 1974, 3, 73-77.
3. Feldhusen, J. F., Treffinger, D. J., and Elias, R., "The Right Kind of Programmed Instruction for the Gifted and Creative." *NSPI Journal*, 1969, 8, 6-11.
4. Feldhusen, J. F. and Treffinger, D. J., "Psychological Background and Rationale for Instructional Design." *Educational Technology*, 1971, 11, 21-24.
5. Metfessel, N., Michael, W., and Kirsner, D., "Instrumentation of Bloom and Krathwohl's Taxonomies for the Writing of Educational Objectives." *Psychology in the Schools*, 1969, 6, 227-231.
6. Plowman, P. D., "[illegible]gramming for the Gifted Child." *Exceptional Children*, 1969, 35, 547-551.
7. Taylor, C. W., "The Highest Talent Potentials of Man." *Gifted Child Quarterly*, 1969, 13, 9-30.
8. Treffinger, D. J., "Teaching for Self-Directed Learning: A Priority for the Gifted and Talented." *Gifted Child Quarterly*, Spring, 1975.
9. Torrance, E. P. and Myers, R. E., "Teaching Gifted Elementary Pupils Research Concepts and Skills." *Gifted Child Quarterly*, 1962, 6, 1-6.

Level C

Abt, C. C., *Serious Games*. New York: Viking, 1970.

Anderson, R. H., "Arousing and Sustaining the Interest of Gifted Children in the Study of Science." *Gifted Child Quarterly*, 1961, 5, 35-41, 46.

Baker, E. L. and Popham, W. J., *Expanding Dimensions of Instructional Objectives*. Englewood Cliffs: Prentice-Hall, 1973.

Baker, R. L. and Schutz, R. E., (Eds.), *Instructional Product Development*. New York: Van Nostrand Reinhold, 1971.

Bechtol, W. M., *Individualizing Instruction and Keeping Your Sanity*. Chicago: Follett, 1973.

Bidlack, G. H., "The Special Teacher/Consultant for Gifted Pupils in the Public School System: Two Approaches." *Gifted Child Quarterly*, 1974, 18(3), 146-151.

Blitz, B., *The Open Classroom: Making It work*. Boston: Allyn and Bacon, 1973.

Block, J., "Teachers, Teaching and Mastery Learning." *Today's Education*, November, 1973, 62, 30-36.

Campbell, R. D., "Special Workshop for the Gifted." *Today's Education*, 1969, 58, 32-33.

Castillo, G. A., *Left-Handed Teaching: Lessons in Affective Education*. New York: Praeger, 1974.

Coletta, A. J., "Reflective and Didactic Styles for Teachers of Young, Gifted and Poor Children." *Gifted Child Quarterly*, 1975, 19(3), 230-240.

Criscuolo, N. P., "Challenging the Gifted Reader." *Gifted Child Quarterly*, 1972, 16, 123-125.

Davis, G. A., *Psychology of Problem Solving: Theory and Practice*. New York: Basic Books, 1973.

Dunn, R. and Dunn, K., *Practical Approaches to Individualized Instruction*. Nyack, N. Y.: Parker, 1972.

Freehill, M. F., "Intelligence, Empathy and Methodologic Bias About Teaching the Gifted." *Gifted Child Quarterly*, 1974, 18(4), 247-248.

French, J. L., "Trends in the Preparation of Teachers of the Gifted." *Exceptional Children*, 1965, 32, 255-256.

Gensley, J., "Task Cards for Gifted Children." *Gifted Child Quarterly*, 1975, 19(3), 192-193.

Gensley, J., "Let's Teach the Gifted To Read." *Gifted Child Quarterly*, 1975, 19(1), 21-22.

George, J. C., "Language Arts for the Gifted." *Elementary English*, 1972, 49, 582-584.

Gowan, J. C., "The California Criterion Scorecard for Evaluation of Gifted Child Programs." *Gifted Child Quarterly*, 1965, 9, 156-158, 160. (Also In: Gowan and Torrance, 1971).

Gowan, J. C., Morrison, C., Groth, N. J., Pasternack, M., and Drake, M., "New Aspects in Guiding the Gifted in Demonstration Classes." *Gifted Child Quarterly*, 1969, 13, 103-112.

Gray, C. E. and Young, R. C., "Utilizing the Divergent Production Matrix of the Structure-Of-Intellect Model in the Development of Teaching Strategies." *Gifted Child Quarterly*, 1975, 19(4), 290-300.

Hauck, B. B., "A Comparison of Gains in Evaluation Ability Bewteen Gifted and Non-Gifted Sixth Grade Students." *Gifted Child Quarterly*, 1967, 11, 166-171.

Hausdorff, H. and Farr, S. D., "The Effect of Grading Practices on the Marks of Gifted Sixth-Grade Children." *Journal of Educational Research*, 1965, 59, 169-172.

Havighurst, R. J. and DeHann, R., *Educating Gifted Children*. Chicago: University of Chicago Press, 1961.

Hopkins, L. B. and Shapiro, A. F., *Creative Activities for the Gifted Child*. Palo Alto: Fearon, 1969.

Horn, L. W. and Gleason, G. M., "Teaching a Unit on the Computer to Academically Talented Elementary School Children" *The Arithmetic Teacher*, 1970, 17, 216-219.

Hull, R. E., "Selecting an Approach of Individualized Education." *Phi Delta Kappan*, November, 1973, 55, 169-173.

Hunkins, F. P., *Questioning Strategies and Techniques*. Boston: Allyn and Bacon, 1972.

Iarusso, M. B., "Creative Children: Children as Filmakers." *Top of the News*, November, 1971, 28, 60-67.

Kapfer, M. B., "Behavioral Objectives and the Gifted." *Educational Technology*, 1968.

Kennedy, L. M. and Michon, R. L., *Games for Individualizing Mathematics Learning*. Columbus: Merrill, 1973.

Kibler, R. J., Cegala, D. J., Barker, L. L., and Miles, D. T., *Objectives for Instruction and Evaluation*, Boston: Allyn and Bacon, 1974.

Koch, K., *Wishes, Lies, and Dreams: Teaching Children To Write Poetry*. New York: Vintage, 1970.

Kohl, H., *Math, Writing, and Games in the Open Classroom*. New York: Vintage/New York Review, 1974.

Kohl, H., "Teachers and Kids: Partners in Game Making." *Learning*, January, 1974, 3, 22-25.

Kough, J., *Practical Programs for the Gifted*. Chicago: Science Research Associates, 1960.

Laycock, S. R., *Gifted Children: A Handbook for the Classroom Teacher*. Toronto: Copp-Clark, 1957.

Lazar, A. L., Gensely, J., and Gowan, J., "Developing Positive Attitudes Through Curriculum." *Gifted Child Quarterly*, 1972, 16, 27-31.

Lloyd, B. C, Seghini, J. B., and Stevenson, G., *Igniting Creative Potential II*. Sandy, Utah: Jordan School District, 1974.

Madden, P., "Exploring and Exploiting Your Community." *Learning*, May, 1973, 2, 6-10.

Marshall, K., "The Learning Station Way." *Learning*, September, 1973, 2, 34-39.

Martinello, M. L., "Learning To Teach From Children's Interests." *Educational Leadership*, December, 1973, 31, 245-249.

Martinson, R., Hermanson, D., and Banks, G., "An Independent Study-Seminar Program for the Gifted." *Exceptional Children*, 1972, 38, 421-426.

Meredith, D. and Landin, L., *100 Activities for Gifted Children*. Palo Alto: Fearon, 1957.

Meyers, E. S., Ball, H. H., and Crutchfield, M., "Specific Suggestions for the Kindergarten Teacher and the Advanced Child." *Gifted Child Quarterly*, 1974, 18, 25-30

Mosston, M., *Teaching: From Command to Discovery*. Belmont: Wadsworth, 1972.

Newland, T. E., "Programs for the Superior: Happenstansical or Conceptual?" *Teachers College Record*, 1961, 62, 513-523.

Newland, T. E., "Some Observations on Essential Qualifications of Teachers of the Mentally Superior." *Exceptional Children*, 1962, 29, 111-114.

Passow, A. H., Beasley, J., and Brooks, D. J., "Adapting the Curriculum to the Needs, Capabilities, and Talents of Individual Students." *Review of Educational Research*, 1957, 27, 277-286.

"Project IMPLODE," *Igniting Creative Potential*. Salt Lake City: Bella Vista School, 1971.

Ringis, R. H., "What Is an Instructional Package?" *Journal of Secondary Education*, May, 1971, 46, 201-205.

Roundey, W. G. and Wheeler, F. E., *Creative Dramatics (Elementary)*. Lincoln: Nebraska State Department of Education, 1973.

Rowe, E. R., "Creative Writing and the Gifted Child." *Exceptional Children*, 1967, 34, 279-282.

Russell, J., *Modular Instruction*. Minneapolis: Burgess, 1974.

Ryan, F. L. and Ellis, A. K., *Instructional Implication of Inquiry*. Englewood Cliffs: Prentice-Hall, 1974.

Sanders, N. M., *Classroom Questions: What Kinds?* New York: Harper and Row, 1966.

Sanders, S., *Creating Plays with Children*. New York: Citation Press (Scholastic), 1970.

Schrank, J., *Teaching Human Beings*. Boston: Beacon Press, 1972.

Schulkind, C. and Baskin, B., "Impaled on a Wild Entanglement of Lace: Poetics for the Young Gifted Child." *Elementary English*, 1973, 50, 1209-1214.

Silberman, C. E., (Ed.), *The Open Classroom Reader*. New York: Vintage, 1973.

Simon, S. B., *Meeting Yourself Halfway*. Niles, Ill.: Argus Communications, 1974.

Simon, S. B., Howe, L. W., and Kirschenbaum, H., *Values Clarification*. New York: Hart, 1972.

Sisk, D., "Simulation: Learning by Doing Revisited." *Gifted Child Quarterly*, 1975, 19(2), 175-180.

Sisk, D., "Encounter Lessons: Activities To Sitimulate Creativity and Positive Feelings of Worth." *Gifted Child Quarterly*, 1975, 19(4), 346-354.

Sonntag, J., "Sensitivity Training with Gifted Children." *Gifted Child Quarterly*, 1969, 13, 51-57.

Suchman, J. R., "A Model for the Analysis of Inquiry." In: Klausmeier, H. J., and Harris, G. W., (Eds.), *Analysis of Concept Learning*. New York: Academic Press, 1966, (Also In: Barbe and Renzulli, 1975.)

Taylor, C. W., "Be Talent Developers." *Today's Education*, 1968, 57, 67-69.

Toomin, M. K. and Toomin, H., "Bio-Feedback: Fact and Fantasy! Does It Hold Implications for Gifted Education?" *Gifted Child Quarterly*, 1973, 17, 48-56.

Torrance, E. P., *Gifted Children in the Classroom*. New York: Macmillan, 1965.

Torrance, E. P., "How Gifted High School Students Can Continue Growing Intellectually." *Gifted Child Quarterly*, 1968, 12, 3-9.

Torrance, E. P., "Gifted Children Can Read Statistics." *Gifted Child Quarterly*, 1970, 14, 3-7.

Torrance, E. P., "Interscholastic Brainstorming and Creative Problem-Solving Competition for the Creatively Gifted." *Gifted Child Quarterly*, 1974, 18, 3-7.

Ward, V. S., *Educating the Gifted: An Axiomatic Approach*. Columbus: Merrill, 1961.

Werblo, D. and Torrance, E. P., "Experiences in Historical Research and Changes in Self-Evaluations of Gifted Children." *Exceptional Children*, 1966, 33, 137-141.

Wright, A. R., "Participative Education and the Inevitable Revolution." *Journal of Creative Behavior*, 1970, 4, 234-282.

Wilson, F. T., "Preparation of Teachers for Gifted Children." *Exceptional Children*, 1953, 20, 78-80.

Wilson, S. H., Greer, J. F., and Johnson, R. M., "Synectics, A Creative Problem-Solving Technique for the Gifted." *Gifted Child Quarterly*, 1973, 17, 260-267.

Wood, F. H., "Individual Differences Count." *NASSP Bulletin*, January 1973, 23-31.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended maximum point values for each project are given in parentheses.

A. General Projects

1. After completing the Level A and B readings, you may wish to select any of the projects or activities from the Basic Project List, page 16.
2. Obtain a teacher's guide for any elementary or secondary level textbook, and locate any provisions for "enrichment" in the book. Analyze the differences, if any, between the enrichment activities and the other material in the book. Review the enrichment activities and evaluate their usefulness for the gifted and talented. (3 points)
3. Prepare a content outline and a set of instructional objectives for that content. For each topic in the content outline, include some appropriate objectives which involve knowledge ***and*** others which involve more complex cognitive and affective outcomes. (3 points)

B. Advanced Projects

1. Select any programmed instructional text you can obtain, and review it using the guidelines provided in the Feldhusen, Treffinger, and Elias article in the Level B readings. For any areas in which the programmed text may not be well-suited for the gifted and talented, describe specific modifications which could be made. (5 points)
2. Plan and prepare the necessary instructional materials for an individualized instructional product, on a topic of your choice. Follow the steps outlined in the Level B readings, and include content outline, knowledge and higher level objectives, a variety of instructional activities, and evaluation procedures. (6 points)

C. Major Projects

1. After completing Advanced Project Number 2 for this Topic, try out your product with a group of at least two or three gifted and talented students. Evaluate whether or not the students attain the objectives, and analyze and evaluate the program itself. Include in your report suggestions for modifications in your product as well as identification of the product's best features. (4 points in additon to the points for project B-2)
2. Develop a ***simulation*** or ***game*** for teaching gifted and talented students how to make and use games and simulations, ***or*** for teaching a general audience about the gifted and talented. (6 points)
3. Work with a group of gifted and talented students to design and implement a unit of study on a ***self-directed*** basis, in which the students are actively involved in decisions during all stages of the planning and conduct of the unit. (5 points)
4. Work with a group of gifted and talented students to plan, conduct, and evaluate a project using basic research skills. Report your results, and evaluate the students' ability to participate in the research process. (5 points)

Final Self-Quiz

1. Name five characteristics commonly found among the gifted and talented, and describe the implications of each for instructional planning.
2. Describe one way in which instruction may be specifically differentiated to meet the unique needs of talented students in each of these areas: academic, creative, leadership, forecasting, communicating, and decision making.
3. Rewrite each of the following objectives so the content area remains the same, but the outcome changes to the level named in the parentheses:
   a) the student will name all fifty states (analysis)
   b) the student can pronounce correctly without hesitation the names of at least five different geometric shapes (evaluation)
   c) the student will recall the names of at least five animals, seen at the zoo, which are natives to Africa (synthesis)
   d) the student will be able to name at least three kinds of dinosaurs. (affective; any level).
4. Describe at least two activities the classroom teacher can use to assist gifted and talented students maintain good relationships with less able or, less talented peers.
5. Name three steps the classroom teacher can follow to help gifted and talented students become better able to evaluate their own learning accomplishments.
6. Describe how any two of the following procedures can help gifted and talented students learn to become self-directed learners: problem-solving experiences, inquiry training, games, participation in research.

Relation of Final Self-Quiz to Objectives and References		
Self-Quiz Item	Objective	References
1	1	Level A; Level B (3, 4, 6)
2	2	Level B (3, 7)
3	3	Level B (3, 4, 5)
4	6	Level A; Level B (5, 6, 7)
5	5	Level B (3, 8)
6	4, 5	Level B (2, 6, 8, 9)

TOPIC GUIDE IX:

EDUCATIONAL PROGRAMS FOR THE GIFTED AND TALENTED

Topic Organizer

This topic is concerned with many different kinds of educational programs for the gifted and talented. How many different kinds of programs are there? How do they differ? What are some examples of programs that have been developed for students at many different age levels?

Minimum Content Objectives

1. Describe the nature and purposes of ***enrichment*** programs for the gifted and talented.
2. Describe several kinds of programs which can be developed under the general prototype of "grouping" programs, and identify the strengths and limitations of such programs.
3. Describe several kinds of programs which can be developed under the general prototype of "acceleration" programs, and identify the strengths and limitations of such programs.
4. Describe several kinds of programs which can be developed under the general prototype of "guidance" programs, and identify the strengths and limitations of such programs.
5. Give examples of specific programs that have been developed and implemented for gifted and talented students, and classify the programs as grouping, acceleration, or guidance prototypes.
6. Describe the principal elements (or "key features") that should be considered in planning and evaluating programs for the gifted and talented.

Rationale

While providing for the needs of the gifted and talented does involve studying the nature of giftedness, the characteristics of the gifted and talented, and identification procedures, none of these areas is sufficient in itself. Once we have found the gifted and talented students, we must actually be able to provide them with instruction that meets their needs. Thus, it is imperative that attention be given to ***educational programs*** for the gifted and talented.

The premise with which we begin, of course, is that by virtue of their exceptional ability the gifted and talented urgently need special educational provision. They are so different from other students that the usual educational procedures are not adequate. Thus, in working on Objective 1, you will study the meaning and purposes of ***enrichment***.

However, it is not the case that there is only one way of responding effectively to these unique needs. In fact, there are a great many different ways in which enrichment can be accomplished for the gifted and talented. These diverse approaches and methods can be organized generally into three categories: ***grouping*** strategies (which you will study in Objective 2), ***acceleration*** programs (in Objective 3), and ***guidance*** approaches (in Objective 4).

Within each of these three categories, there is an abundance of program descriptions, evaluation studies, and research, involving students at many ages in school districts throughout the United States and Canada. You will review some of the evaluation and research studies in working on Objectives 2-4, and as you work on Objective 5, you will examine a number of illustrative programs.

When you attempt to develop a differential program for gifted and talented students, at any level, there are a number of basic factors that must be taken into account in order to create an adequate and successful program. Renzulli and his associates have studied many of these factors, and from their research several "key features" have been identified. You will study these features as you work on Objective 6.

Not every program for the gifted and the talented has been soundly planned or designed. But the result of a school's failure to devote adequate time to analyzing and comparing program prototypes is too often the failure and rapid demise of the program, followed by the shallow, "We tried that once and it didn't work" argument. Every person who is concerned about the adequacy of our educational provisions for the gifted and talented should give careful attention to the basic questions, "What kind of a program should we develop?" and "Why?"

Pre-Instruction Self-Quiz

1. Describe briefly three different program prototypes for the gifted and talented for each of the following program categories: grouping, acceleration, and guidance.
2. Describe and give the location of one specific school program which has been developed and implemented in each of the three general categories (grouping, acceleration, and guidance).
3. Name five key features which should be considered in designing any educational program for the gifted and talented.
4. Select one general program model (grouping, acceleration, and guidance) and summarize the documented ***assets*** and ***limitations*** of that model

Bibliography

Level A

Gallager, J. J., *Educating the Gifted Child*, (Second Edition). Boston: Allyn and Bacon, 1975, Ch. 4, 11, plus relevant selections from ch. 3, 5-7, 9, 10, 11. or

Gold, M. J., *Education of the Intellectually Gifted*. Columbus: Merill, 1965, ch. 6, 7. or

Hildreth, G. H., *Introduction to the Gifted*. New York: McGraw-Hill, 1966, ch. 7, 8, and ch. 9 or 12 and 13. or

Kaplan, S. N., *Providing Programs for the Gifted and Talented: A Handbook*. Ventura: (California) Ventura County Superintendent of Schools Office, 1974, 45-89.

Level B

1. Arn, W. and Frierson, E., "An Analysis of Programs for the Gifted." *Gifted Child Quarterly*, 1964, 8, 3-8. (Also In: Gowan and Torrance, 1971).
2. Cohodes, A., "How Schools Can Turn Out Students Who are Winners." *Nation's Schools*, December, 1973, 92, 10.
3. Horowitz, E. L., "Educating the Gifted Child." *Gifted Child Quarterly*, 1974, 18, 17-21.
4. Laird, A. W., "The Fifty States' Educational Provisions for Gifted Children." *Gifted Child Quarterly*, 1971, 15, 205-216.
5. Renzulli, J. S., "Identifying Key Features in Programs for the Gifted." *Exceptional Children*, 1968, 35, 217-223. (Also In: Barbe and Renzulli, 1975).
6. White, M. J., "The Case for Specifically Designed Education for the Gifted." *Gifted Child Quarterly*, 1970, 14, 159-162.
7. Ward, V. S., "Program Organization and Implementation." (In: Barbe and Renzulli, 1975, 295-302).

Level C

(Note: For convenience, the Level C Bibliography for this topic has been subdivided into specific areas.)

1. General Issues in Program Development

Bereday, G. Z. F. and Lawrence, J. (Eds.), *Yearbook of Education: Concepts of Excellence in Education*. New York: Harcourt, Brace and World, 1961.

Bish, C., "The Academically Talented Project." *Gifted Child Quarterly*, 1975, 19(4), 282-289.

Drews, E. M., "Beyond Curriculum." *Journal of Humanistic Psychology*, 1968, 8, 97-112. (Also In: Gowan and Torrance, 1971).

Edlund, C. V., "Observations and Reactions to Gifted Programs a Psychologist Has Seen." *Gifted Child Quarterly*, 1974, 18(3), 173-174.

Lenzmann, A. M., "A Comparison of Academic Achievement of Gifted Students Enrolled In Regular and In Separate Classrooms." *Gifted Child Quarterly*, 1963, 7, 176-179.

Feldhusen, J. F., Treffinger, D. J., and Elias, R. M., "The Right Kind of Programmed Instruction for the Gifted." *NSPI Journal*, 1969, 8, 6-11.

Fliegler, L. A., *Curriculum Planning for the Gifted*. Englewood Cliffs: Prentice-Hall, 1961.

French, J. L., "The Preparation of Teachers of the Gifted." *Journal of Teacher Education*, 1961, 12, 69-72.

Gowan, J. C., "The Cognitive and Affective Stimulation of Gifted Children" In: Gowan and Torrance, 1971.

Gowan, J. C. and Demos, G. D., *The Education and Guidance of the Ablest*. Springfield, Ill.: Charles C. Thomas, Publisher, 1964.

Haggerty, B. L., "And Let the Sunshine In: A Means of Meeting the Educational Needs of Gifted Children." *Gifted Child Quarterly*, 1972, 16, 119-122.

Hymes, R. and Bullock, F. O., "Alternative Schools: Answers to the Gifted Child's Boredom." *Gifted Child Quarterly*, 1975, 19(4), 340-345.

Malone, C. E., "Implementing a Differential School Program for the Gifted." *Gifted Child Quarterly*, 1975, 19(4), 316-327.

Rosenberg, H. and Ehrgott, R., "Performance Contracting, Programmed Learning and Behavior Modification May Inhibit Learning of the Gifted." *Gifted Child Quarterly*, 1973, 17, 254-259.

Taylor, C. E. and Harding, H. H., "Questioning and Creating: A Model for Curriculum Reform." *Journal of Creative Behavior*, 1967, 1, 22-33.

Thomas, S. B., "Neglecting the Gifted Causes Them to Hide Their Talents." *Gifted Child Quarterly*, 1973, 17, 193-198.

2. Specific Program Arrangements: Theory and Research

Barbe, W. B., "Homogeneous Grouping for Gifted Children" *Educational Leadership*, 1956, 13, 225-229. (Also In: Barbe and Renzulli, 1975).

Birch, J. W., "Early School Admission for Mentally Advanced Children." *Exceptional Children*, 1954, 21, 84-87. (Also In: Barbe and Renzulli, 1975).

Bish, C. E., "Brief Overview of the Activities of the NEA Project." *Gifted Child Quarterly*, 1969, 13, 116-118. (Also In: Gowan and Torrance, 1971).

Borg, W. R., *An Evaluation of Ability Grouping*. Logan: Utah State University, 1964.

Braga, J. L., "Early Admission: Opinion Versus Evidence." *Elementary School Journal*, 1971, 72, 35-46.

Eisner, E. W., "Arts Curricula for the Gifted." *Teachers College Record*, 1966, 67, 492-501.

Ekstron, R. B., "Experimental Studies of Homogeneous Grouping: A Critical Review." *School Review*, 1961, 69, 216-226.

Feingold, S. N., "Guidance for Gifted Students." *Occupational Outlook Quarterly*, February, 1968, 12.

Frederickson, R. H. and Rothney, J. W. M., "Statewide Implementation of Classroom Practices for Superior Students." *Exceptional Children*, 1968, 35, 135-140.

Gallagher, J. J., Greenman, M., Karnes, M., and King, A., "Individual Classroom Adjustments for Gifted Children in Elementary Schools." *Exceptional Children*, 1960, 409-422, 432.

Goldberg, M. and Passow, A. M., "The Effects of Ability Grouping." *Education*, 1962, 82, 1-6.

Goldberg, M. L., Passow, A. H., and Justman, J., *The Effects of Ability Grouping*. New York: Columbia Teachers College Press, 1966.

Griffin, W. M., "Schedules, Bells, Groups and Independent Study." (In: Barbe and Renzulli, 1975, 330-335).

Halliwell, J. W., "A Comparison of Pupil Achievement in Graded and Non-Graded Primary Classrooms." *Journal of Experimental Education*, 1963, 32, 59-64.

Klausmeier, H. J. and Ripple, R. E., "Effects of Accelerating Bright Older Pupils: A Follow-Up." *Journal of Educational Psychology*, 1963, 54, 165-171.

Klausmeier, H. J., and Ripple, R. E., "Effects of Accelerating Bright Older Pupils from Second to Fourth Grade." *Journal of Educational Psychology*, 1962, 53, 93-100.

Klausmeier, H. J., Goodwin, W., and Ronda, T., "Effects of Accelerating Bright, Older Elementary Pupils: A Second Follow-Up." *Journal of Educational Psychology*, 1968, 59, 53-58.

Kraus, P. E., "The Accelerated." *Gifted Child Quarterly*, 1973, 17, 36-47.

Krohn, M. L., "Learning and the Learning Center." *Educational Leadership*, 1974, 21, 217-222. (Also In: Barbe and Renzulli, 1975).

Lanza, L. G. and Vassar, W. G., "Designing and Implementing a Program for the Gifted and Talented." *National Elementary Principal*, 1972, Vol. 51. (Also In: Barbe and Renzulli, 1975, 316-323).

LaSalle, D. P. and Atamian, G. C., "Talcott Mountain Science Center for Student Involvement." (In: Gowan and Torrance, 1971).

McWilliams, E. M., "Enrichment Practices for Gifted Junior High School Pupils." *NAASP Bulletin*, 1956, 40, 72-81.

Meeker, M., "Differential Syndromes of Giftedness and Curriculum Planning: A Four Year Follow-Up." *Journal of Special Education*, 1968, 2, 185-196.

Otterness, J. A., "A Gifted Program for Rural Schools." *Gifted Child Quarterly*, 1971, 15, 49-50, and 56.

Passow, A. H., "The Maze of Research on Ability Grouping." *Educational Forum*, 1962, 26, 281-288.

Plowman, P. D., "What Can Be Done for Rural Gifted Children and Youth?" *Gifted Child Quarterly*, 1968, 12, 160-174.

Plowman, P. D., "The California Curriculum Project for the Gifted." *Gifted Child Quarterly*, 1969, 13, 113-115.

Renzulli, J. S. and Vassar, W. G., "The Connecticut Program for the Gifted." *Today's Education*, 1968, 57, 74-76.

Ripple, R. E., "A Controlled Experiment in Acceleration from the Second to Fourth Grade." *Gifted Child Quarterly*, 1961, 5, 119-120.

Saunders, R. J., "The Role of the Arts in Creativity for the Gifted." *Gifted Child Quarterly*, 1968, 12, 120-124.

Shannon, D. C., "What Research Says About Acceleration." *Phi Delta Kappan*, 1957, 30, 70-73.

Sonntag, J., "Sensitivity Training With Gifted Children." *Gifted Child Quarterly*, 1969, 13, 51-57.

Stanley, J. C., "Accelerating the Educational Progress of Intellectually Gifted Youths." *Educational Psychologist*, 1973, 10, 133-146.

Steele, J. M., House, E. R., Lapan, S. D., and Kerins, T., "Cognitive and Affective Patterns of Emphasis in Gifted and Average Illinois Classes." *Exceptional Children*, 1971, 37, 757-759.

Thompson, G. W., "The Effects of Ability Grouping Upon Achievement in Eleventh Grade American History." *Journal of Experimental Education*, 1974, 42, 76-79.

Torrance, E. P., "Gifted Children Can Read Statistics." *Gifted Child Quarterly*, 1970, 14, 3-7.

Weinstein, B., Mitchell, P., Schwartzstein, M., and Hirschborn, B., "The Adjustment of Children in a Suburban Community Who Were Accelerated in Elementary School." *Journal of School Psychology*, 1966, 5, 60-63.

3. Pre-School and Elementary Programs

Baer, D. S., "A Talking Typewriter for Young Gifted Children: Joys and Headaches." *Gifted Child Quarterly*, 1972, 16, 41-47.

Brazell, J., "Streamlined Reading." *The Reading Teacher*, 1970, 23, 621-624.

Campbell, C. C., "Morning Brings Enrichment." *Instructor*, 1970, 79, 50-51.

Campbell, R. D., "Special Workshop for the Gifted." *Today's Education*, 1969, 58, 32-33.

Fox, A. E., "Kindergarten: Forgotten Year for the Gifted?" *Gifted Child Quarterly*, 1971, 15, 42-48.

Hall, T., *Gifted Children: The Cleveland Story*. New York, Harcourt, Brace, and World, 1956.

Hauck, B. B., "A Comparison of Gains in Evaluation Ability Between Gifted and Non-Gifted Sixth-Grade Students." *Gifted Child Quarterly*, 1967, 11, 166-171.

Horn, L. W. and Gleason, G. M., "Teaching a Unit on the Computer to Academically Talented Elementary School Children." *The Arithmetic Teacher*, 1970, 17, 216-219.

Laycock, M., "Creative Mathematics at Nueva." *The Arithmetic Teacher*, 1970, 17, 325-328.

Maaia, L. J., "Rhode Island's Tri-City Project." *Today's Education*, 1973, 62, 36-37.

Peters, S., "Open Education—The American British Infant School." *Gifted Child Quarterly*, 1971, 15, 229-232.

Powell, W. R. and Munsey, C., "San Diego's Program for the Gifted." *Today's Education*, 1973, 62, 38-39.

Pringle, R. G., Webb, J. G., Warner, D. A., and Peterson, A. V., "Innovative Education for Gifted Children in Rural Elementary Schools." *Elementary School Journal*, 1972, 73, 79-84.

Renzulli, J. S., "A Curriculum Development Model for Academically Superior Students." *Exceptional Children*, 1970, 36, 611-615.

Rivero, S., "The Urbana Service and Demonstration Center for Gifted Youths." (In: Gowan and Torrance, 1971).

Roeper, A., "Planning for the Gifted: A New Task for Nursery Educators." *Gifted Child Quarterly*, 1963, 7, 113-115.

Roeper, A., "Gifted Preschooler and Montessori Method." *Gifted Child Quarterly*, 1966, 10, 83-89.

Rush, B. M., "Montessori for the Gifted." *Children's House*, 1970, 4, 5-9.

Ryder, V. P., "A Docent Program in Science for Elementary Pupils." *Exceptional Children*, 1972, 38, 629-631.

Schulkind, C. and Baskin, B., "Impaled on a Wild Entanglement of Lace: Poetics for the Young Gifed Child." *Elementary English*, 1973, 50, 1209-1214.

Sowell, S., "Summer School for the Gifted? Why Not?" *Gifted Child Quarterly*, 1972, 16, 89-92.

Torrance, E. P. and Myers, R. E., "Teaching Gifted Elementary Pupils Research Concepts and Skills." *Gifted Child Quarterly*, 162, 6, 1-6. (Also In: Gowan and Torrance, 1971; see also Torrance's *Gifted Children in the Classroom.)*

Wall, H. R., "Bright Kids Were 'Turned On'." *instructor*, 1970, 79, 48-49.

Youngs, R. C., Stein, E. G., and Wedekind, R. R., "A Team Teaching Summer Program for Sixth-Grade Students." *Gifted Child Quarterly*, 1970, 14, 36-40.

4. Junior High and Secondary Programs

Bennett, F., Blanning, J., et. al. "Potentially Gifted and Talented High School Youth Benefit from Independent Study." *Gifted Child Quarterly*, 1971, 15, 96-108.

Carlson, D. M., "A United States History Course for Accelerated Students." *Social Studies*, 1968, 59, 307-310.

Dunn, B. J., "The El Monte Project for High Risk Talent Retrieval." *Gifted Child Quarterly*, 1972, 16, 235-239.

Frankel, E., "Effects of a Program of Advanced Summer Study on the Self-Perceptions of Academically Talented High School Students." *Exceptional Children*, 1964, 30, 245-249.

Gold, M. J., "Death of a School for the Gifted." *Gifted Child Quarterly*, 1970, 14, 174-179.

Hanks, J. J., "Film-Making—Some Experiences with the Gifted." *English Journal*, 1971, 60, 121-125.

Hermanson, D., "One Hundred Recommendations for a Senior High School Gifted Program." *Gifted Child Quarterly*, 1971, 15, 249-255.

Hogan, R. E., "Georgia's GHP." *Today's Education*, 1973, 62, 34-35.

Husted, I., Pisaneschi, P., and Barbe, W., "Challenging Gifted High School Seniors." *Exceptional Children*, 1970, 37, 41-42.

Jackman, W. D. and Bachtold, L. M., "Evaluation of a Seminar for Gifted Junior High Students." *Gifted Child Quarterly*, 1969, 13, 163-168.

Martinson, R., Hermanson, D., and Banks, G., "An Independent Study-Seminar Program for the Gifted." *Exceptional Children*, 1972, 38, 421-426.

Meskill, V. P. and Lauper, R. T., "Breaking the Lockstep for the Gifted." *NASSP Bulletin*, 1973, 57, 58-62.

Mitchell, W. B., "Specialized Programs for Academically Advanced Students." *NASSP Bulletin*, 1970, 54, 94-99.

Parker, P., "Escrow College: High School Students Study at Community Colleges." *The Clearing House*, 1971, 45, 439-443.

Porter, R. M., "Saturday Seminars for the Able and Ambitious." *NASSP Bulletin*, 1970, 54, 26-38.

Roth, E., "Columbia University Helps Exceptional High School Students." *Gifted Child Quarterly*, 1969, 13, 181-185.

Ryder, J. H., "Summer Program for the Able and Ambitious Student." *NASSP Bulletin*, 1970, 54, 138-141.

Schubert, L, "Project Interface—Motivation for the Brightest." *Science Teacher*, 1970, 37, 15-16.

Simmons, J., Davis, W., Ramseyer, G., and Johnson, J., "Independent Study Methods and the Gifted Biology Student." *American Biology Teacher*, 1971, 33, 416-418.

Taffel, A., "A Program for the Gifted at the Bronx High School of Science." *Gifted Child Quarterly*, 1961, 5, 69-70.

Torrance, E. P., "How Gifted High School Students Can Continue Growing Intellectually." *Gifted Child Quarterly*, 1968, 12, 3-9. (Also In: Gowan and Torrance, 1971).

Watson, C., "Talent Runs Free at the Twin Cities Institute." *American Education*, 1970, 6, 3-6.

5. Programs In Other Countries

Furr, K. D., Landrus, G., and Goldie, H., "Canadian Programming for the Gifted: A System Approach to Their Identification in a Changing Multi-Cultural City." *Gifted Child Quarterly*, 1972, 16, 32-40.

Press, B. K., "Education of the Gifted in the USSR." *Exceptional Children*, 1964, 30, 241-244.

Rowland-Jones, T. L., "English Educator Studying the Gifted Reports On His Visit to America." *Gifted Child Quarterly*, 1973, 17, 211-214.

Weyl, N., "The Potential Role of the Gifted in Underdeveloped Countries." *Gifted Child Quarterly*, 1970, 14, 29-35.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended point values for each project are given in parentheses.

A. General Projects

1. After completing the Level A and B readings, you may wish to select any of the projects or activities from the Basic Project List, page 16.
2. Visit a school in which there is a special educational program for the gifted and talented. Observe in some classes, and talk with some teachers and students. Report on the general category into which the program fits, and its relationship to Renzulli's "key features" for such programs. (3 points)
3. Review Topic 4 (Characteristics of the Gifted and Talented) and/or Topic 7 (Culturally Different Students) and develop a list of the personal characteristics, typical behavior, goals, and interests of the gifted and talented. For each of these unique characteristics, report on the implications for planning educational programs. In what ways must programs for the gifted and talented be particularly unique or different from other programs? (3 points)
4. Compare the "key features" of programs for the gifted and talented with recent guidelines for program development in other areas (physically handicapped, mentally retarded, or other special education areas; open education or "informal" education, etc.). (3 points)

B. Advanced Projects

1. Write to two or three schools where programs for the gifted and talented have been described in journals in recent years. Request information concerning the following: (1) current status of the program and reasons for any changes; (2) information about new evidence regarding the program's short-term or long-range effects; (3) information about other related programs. Report on the results of your inquiry and possible explanations, where possible. (5 points)
2. Select any of the kinds of programs described in the three general "prototypes" of programs (See Kaplan, 1974) and conduct a thorough review of the literature. Report on as many studies as you can which provide evidence bearing on the effectiveness of the program at various ages or in different settings. (5 points)

C. Major Projects

1. If there is a school in your area which has had a program for the gifted and talented for several years, plan and conduct a follow-up study of students who participated in the program at several intervals (5, 8, or 10 years ago, for example). Determine as much as you can about the participants' subsequent school experiences, goals, and career choices. Prepare a report on your findings. (7 points)

2. Write to the State Departments of Education around the U.S.A., and to appropriate offices in other countries, to determine what legislative or policy provisions are currently in force, or are being planned, for the education of the gifted and talented. Report on your results. (6 points)

Final Self-Quiz

1. Define and give at least three general examples of programs for the gifted and talented based upon the "grouping" concept.
2. Define and give at least three general examples of programs based upon the "acceleration" concept.
3. Define and give at least three general examples of programs based upon the "guidance" concepts.
4. List five key features of a program for the gifted and talented.
5. Recently a principal said, "We don't need to do anything special for the gifted as a group; because we already have an individualized instruction program in our school." Describe several ways in which (a) there still may be a need for more adequate provision for the gifted and talented and (b) the existing program may specifically fail to meet the educational needs of the gifted and talented.

Relation of Final Self-Quiz to Objectives and Readings		
Question	Objective	References
1	2	Level A (Kaplan)
2	3	Level A (Kaplan)
3	4	Level A (Kaplan)
4	6	Level B (Renzulli)
5	1, 5, 6	Level A; Level B (2, 3, 6)

TOPIC GUIDE X:

THE ROLE OF PARENTS IN EDUCATING THE GIFTED AND TALENTED

Topic Organizer

Sometimes we tend to think of education as the special province of schools and teachers. When we are dealing with high levels of talent and ability, however such thinking may well be faulty. What is the role of the parents in identifying gifted and talented students? How can parents work cooperatively with the school to provide optimum learning experiences for the gifted and talented? How can teachers capitalize upon parents as resources for learning, in or outside of school? What kinds of family backgrounds and characteristics are commonly associated with the encouragement of giftedness and talent?

Minimum Content Objectives

1. Explain several ways in which parents can assist the schools in identifying gifted and talented students.
2. Describe the principal findings of research on the family backgrounds and child-rearing practices among parents of gifted and talented individuals.
3. Describe several ways in which cooperative programs can be established among parents and schools, in which parents can contribute to the education of gifted and talented students.
4. Explain several things that parents of gifted and talented students can do to provide support and opportunities for out-of-school learning.
5. Explain several ways in which parents can cooperate with schools in helping gifted and talented students deal with problems of motivation, adjustment, and peer relationships.
6. Describe several ways in which parents can effectively promote the creation or support of qualitatively different educational programs for the gifted and talented.

Rationale

In your work on this Topic, you will focus upon ways in which teachers and parents can work together harmoniously to insure optimum educational provisions for gifted and talented students.

Too often parents may be viewed by the school as untrained, inept nuisances, concerned only with promotion of their own child's welfare. This view leads the educator to miss many important contributions of parents which are essential to the eventual success or failure of the school's efforts. On the other hand, the parents can also be easily misled into being cynical and hostile about the school's efforts to provide for the truly superior student.

The constant bickering of two such "camps," each dealing in stereotypes of the other, can do little good for the education of the students. Thus, the purpose of this Topic, in the most general sense, is to help parents and teachers recognize the need to work together in educating the gifted and talented and the value of such efforts.

In working on Objective 1, you will investigate ways in which parents can contribute to the completeness and accuracy of the school's efforts at screening and identification. Although final identification must involve trained professional efforts, the initial screening procedures should not ignore any potentially useful sources of "evidence" of a child's ability. Schools should thus learn to look more to parents for such evidence, and to use approaches that will be most likely to yield information that will be valuable in the screening and identification processes.

Objective 2 is concerned with the characteristics and child-rearing practices that have commonly been associated with the home lives and experiences of gifted and talented people. Sources of evidence as to the correlates (and possible origins) of talent have included both biographical studies of the lives of eminent people and experimental investigations of specific characteristics or practices.

As you work on Objective 3, you will investigate ways in which parents and schools can work together cooperatively to improve the ***in-school*** learning experiences of gifted and talented students. You will examine several ways in which parents may serve directly to help enhance the quality of the instructional program, as well as ways in which the parent may ***support*** the school's efforts in a more indirect way.

Parents can also provide opportunities for enriched learning and growth by gifted and talented students away from the school setting, through home and community activities; these directions constitute the focus of Objectives 4 and 5. In Objective 4, you will study ways in which parents can fill the role of educators outside the school. Such efforts, of course, would be most successful when they are coordinated with school programs, rather than study the supportive role that can be played by the parents in helping gifted and talented students deal with personal, social, and academic problems. The parent cannot provide professional counseling services, of course, but can make many efforts to assist the gifted or talented students cope effectively with problems.

Parents can also be a constructive force for the development, modification, or support of any educational program, of course. Wise educators will learn to work with the "parent lobby" to identify mutual goals and concerns, and to promote efforts for thoughtful, systematic change. Careful advance cooperation among educators and parents can result in a strong case for adequate programming for the gifted and talented. Arguments, personality clashes, and disputes over goals and directions can inhibit growth or change entirely. In Objective 6, you will study some ways in which effective working relationships can be created.

Pre-Instruction Self-Quiz

1. Name at least three child-rearing variables which research has shown to be related to successful achievement by gifted and talented persons.
2. Name three ways in which parents can provide evidence that will be useful to schools in screening or identifying gifted and talented students.
3. Name at least three ways in which parents can make a positive contribution to in-school educational programs for the gifted and talented.
4. Name at least three things which parents can do, outside of the school setting to enrich learning for the gifted and talented.
5. Name one specific way parents can assist the school in helping gifted and talented students deal with ***each*** of the following problems:
   a) disinterest in school assignments and activities
   b) feelings of embarassement or self-doubt
   c) teasing by other children in a class.
6. Describe at least three ways in which parents can exert a positive force for the development of adequate programs for educating gifted and talented students.

Bibliography

Level A

Gold, M. J., *Education of the Intellectually Gifted*. Columbus: Merrill, 1965, 372-379, 26-31. or

Hildreth, G. H., *Introduction to the Gifted*. New York: McGraw-Hill, 1966, 544-552. or

Delp, J. L. and Martinson, R. A., *The Gifted and Talented: A Handboook for Parents*. Ventura: (California) Ventura County Superintendent of Schools Office, 1974.

Level B

1. Dewing, K., "Family Influences on Creativity: A Review and Discussion." *Journal of Special Education*, 1970, 4, 399-404.
2. Gensley, J., "Parent Perspective: Only the Learner Can Learn." *Gifted Child Quarterly*, 1969, 13, 49-50. (Also In: Gowan and Torrance, *Educating the Ablest*, 1971).
3. Gowan, J. C., "Twenty-Five Suggestions for Parents of Able Children." *Gifted Child Quarterly*, 1964, 8, 192-193. (Also In: Gowan and Torrance, 1971)
4. Jacobs, J. C., "Effectiveness of Teacher and Parent Identification of Gifted Children as a Function of School Level." *Psychology in the Schools*, 1971, 8, 140-142.
5. Oppen, M. B., "Gifted Child in a Small Town: A Parent's Point of View." *Gifted Child Quarterly*, 1970, 14, 92-95.
6. Ostrom, G., "The Self-Concept of Gifted Children Grows Through Freedom of Choice, Freedom of Movement, and Freedom To Do What is Right." *Gifted Child Quarterly*, 1973, 17, 285-287.

Level C

Albert, R. S., "Cognitive Development and Parental Loss Among the Gifted, the Exceptionally Gifted, and the Creative." *Psychological Reports*, 1971, 29, 19-26.

Besdine, M., "Mrs. Oedipus Has Daughers, Too." *Psychology Today*, 1971, 4, 62-65.

Brumbaugh, F. N. and Roshco, B., *Your Gifted Child: A Guide for Parents*. New York: Holt, Rinehart, and Winston, 1959.

Carley, I., "Reflections on the Care and Nuture of Gifted Children in a Musical Family." *Gifted Child Quarterly*, 1968, 12, 175-178.

Ciha, T. E., Harris, R., and Hoffman, C., "Parents as Identifiers of Giftedness, Ignored But Accurate." *Gifted Child Quarterly*, 1974, 18(3), 191-195.

Cornish, R. L., "Parents', Teachers', and Pupils' Perception of the Gifted Child's Ability." *Gifted Child Quarterly*, 1968, 12, 14-17.

DeHaan, R. F., *Guidelines for Parents of Capable Youth*, Chicago: Science Research Associates, 1961.

Gensley, J., "The Bored Child." *Gifted Child Quarterly*, 1971, 15, 60-61.

Gensley, J., "Concerns of Parents." *Gifted Child Quarterly*, 1975,19(2), 96-97.

Gensley, J., "The Gifted Adolescent." *Gifted Child Quarterly*, 1974, 18(3), 210.

Getzels, J. and Jackson, P., *Creativity and Intelligence*, New York: Wiley, 1962.

Groth, N. J., "Differences in Parental Environment Needed for Degree of Achievement for Men and Women." *Gifted Child Quarterly*, 1971, 15, 256-261.

Groth, N. J., "Mothers of Gifted." *Gifted Child Quarterly*, 1975, 19(3), 217-222.

Jacobs, J. C., "Evaluation of Mother Teaching Style in High Ability Families." *Gifted Child Quarterly*, 1971, 15, 32-35.

Kennedy, W. A. and Willcott, H., "Youth-Parent Relations of Mathematically Gifted Adolescents." *Journal of Clinical Psychology*, 1963, 19, 400-402.

Laycock, S. R., "Counseling Parents of Gifted Children." *Exceptional Children*, 1956, 23, 108-110, 134.

Malone, C. E., "Education of Parents of the Gifted." *Gifted Child Quarterly*, 1975, 19(3), 223-225.

McGillivray, R. H., "Differences in Home Background Between High-Achieving and Low-Achieving Children" *Ontario Journal of Educational Research*, 1964, 6, 99-106.

Norman, R. D., "The Interpersonal Values of Parents of Achieving and Non-Achieving Gifted Children." *Journal of Psychology*, 1966, 64, 49-57.

Sanderlin, O., "In Setting Up Effective Community Visitation—Can We Do Too Much for the Gifted?" *Gifted Child Quarterly*, 1972, 16, 114-118.

Strang, R., *Helping Your Gifted Child*. New York: E. P. Dutton, 1960.

Torrance, E. P., "How Gifted High School Students Can Continue Growing Intellectually." *Gifted Child Quarterly*, 1968, 12, 3-9.

Witt, G., "The Family Enrichment Program." (In: Gowan, J. C. and Torrance, E. P., (Eds.), *Educating the Ablest*. Itasca, Ill.: F. E. Peacock, 1971, 192-197.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended point values for each project are given in parentheses.

A. General Projects

1. After completing the Level A and B readings, you may wish to select any of the projects or activities from the Basic Project List, page 16.
2. Read the biography of a gifted and talented person (such as Clark's, ***Einstein: The Life and Times***, for example). Report on the contribution of the parents to the person's learning and development, and particularly on the nature of parent-school relationships. (3 points)
3. Interview the parents of one or more gifted or talented students. Discuss with them their outstanding, positive experiences with their child; evidence of the child's ability, in or out of school; problems they have encountered, and general home and school behavior and relations. (The Delp-Martinson reference in the Level A references contains a great deal of material that would be useful in conducting this project.) (3 points for interview of one set of parents)
4. Develop a booklet that might be used by teachers of gifted and talented children to improve parent-teacher communication and cooperation. Report on what you include, how it might be used, and why you believe it might be useful. (4 points)

B. Advanced Projects

1. Identify a gifted or talented student at an age or grade level of your choice. Interview the student, the parent(s), and the student's teacher(s). In each interview, probe for evidence of cooperation (or the lack of it) between home and school. Report on the strengths of the school-home cooperation, as seen by each of the participants. On the basis of your reading and study, try to develop specific recommendations for improving school-pupil-parent cooperation. (5 points)
2. Identify what efforts are being made by parents' groups with other concerns (e.g., other special educational concerns; political or religious groups; groups concerned about finances and expenses; groups organized, pro or con, about specific issues) in a local community or school district. Describe the methods and impact of these groups, and identify specific strategies (to follow or to avoid) in planning for parent groups concerned with the gifted and talented. (5 points)
3. Develop a set of goals for parent cooperation and involvement in programs for the gifted and talented. Have the program reviewed by teachers, administrators, parents, board members, and/or students. Compare their reactions. (An interesting modification is to present a "description" of an already-existing program, such as varsity athletics, as a proposal for a new program for the gifted and talented, and analyze the results; see Gallagher, 1964.) (5 points)

C. **Major Projects**

1. Organize a program or presentation for parents on education of the gifted and talented, including any visual aids, films, speakers, student panels, etc., you feel may be valuable. Conduct the program for a group (such as a Parent-Teacher Organization, for example) and report on their responses and follow-up activities. (6 points)
2. Organize or participate in an existing parents' group in your community to develop cooperative home-school programs for the gifted and talented. Report on the ideas created by such a group, and the response and acceptance of such ideas by school personnel. Include any recommendations for altering or improving the proposed programs or for encouraging their successful adoption. (6-8 points maximum, depending upon the extent of your involvement and participation in the group)
3. Write to parent organizations for the gifted and talented to obtain any published materials, guidelines, parent guides, or newspaper articles that may be available. Review the material you receive and attempt to compare the results of various efforts. Include in your report your own analysis of the results and your recommendations (if any) for helping the groups concerned. (7 points)

Final Self-Quiz

1. List three ways in which parents can provide information that can be used by schools in screening or identifying gifted and talented students.
2. Write a brief, general description of the father and mother of an academically gifted boy or girl. Include specific child-rearing behavior in your description.
3. List at least three ways parents can contribute to the school's program of instruction for the gifted and talented.
4. Name and explain at least three suggestions you would make to the parents of a gifted or talented child concerning out-of-school activities and learning.
5. What suggestions would you offer to parents of gifted and talented children who are faced with problems of motivation, adjustment, or relationships with other students?
6. What would you advise a parent who came to you and wanted to know how to get the school district to pay more attention to gifted and talented students?

Relation of Final Self-Quiz to Objectives and Readings

Question	Objective	References
1	1	Level A; Level B (3, 4)
2	2	Level A; Level B (1, 3)
3	3	Level A; Level B (2, 3, 5, 6)
4	4	Level A; Level B (2, 3, 5, 6)
5	5	Level A; Level B (3, 5, 6)
6	6	Level A; Level B (3)

TOPIC GUIDE XI:

EVALUATION PROCEDURES

Topic Organizer

Evaluation is a process involving judgments and decisions. Our efforts at providing differentiated educational programs for the gifted and talented may be the subject of many questions: Has the program succeeded in reaching its goals? Were the goals appropriate and well-chosen? Was the program more effective than other alternatives? Were the efforts efficient? Were the goals attained within the expected constraints of time and resources?

Minimum Content Objectives

1. Define "accountability" and describe several ways in which this concept may be applied to programs for the gifted and talented.
2. Define and distinguish among testing, measurement, and evaluation.
3. Define five key features upon which the evaluation of programs for the gifted and talented should be based, and describe the program requirement criteria for each key feature, according to Renzulli.
4. Identify several evaluation questions which should be raised during the stages of initiating, developing and integrating a program for the gifted and talented, according to Eash.

Rationale

This Topic is concerned with the evaluation of educational programs for the gifted and talented, rather than with specific procedures for evaluating student achievement.

Recently, educators have become more acquainted with the term "accountability". More than ever before, there are pressures from a variety of outside sources for educational programs to demonstrate clearly that they are providing full value for the resources they receive. In Objective 1, you will study some recent work on accountability and consider its implications for educational programs for the gifted and talented.

In order to avoid later misunderstandings, Objective 2 will assist you in distinguishing among three terms which people, occasionally and incorrectly, merge and use interchangably.

The work of Renzulli and Ward on the development of evaluation scales for differential educational programs for the gifted has provided the most comprehensive statement now available in this area. As you will study in Objective 3, they have proposed that evaluation of programs for the gifted and talented should involve five key features. Under these five general categories, 15 program requirements have been identified, which provide a specific basis for a systematic evaluation.

Although we sometimes think of evaluation as a process that occurs ***after*** a program has been completed, the work of Renzulli and Ward, and Maurice Eash, which you will study in Objective 4, serves to foster a more complete view. Evaluation should occur during the planning (or initiating) stages of programs for the gifted and talented, as well as during the process (developing stage) and at the conclusion (integrating stage) of a program. Questions which should be included in adequate evaluation efforts at each of these levels will be considered in Objective 4.

Any educator who is concerned about the quality of an educational program for the gifted and talented will necessarily be concerned with ***evaluation***. This Topic should assist in planning and evaluation of such programs that will be fair, thorough, and useful in revising or modifying the program as necessary.

Pre-Instruction Self-Quiz

1. Name at least three ways in which basic concern for "accountability" in education may justifiably be related to programs for the gifted and talented.
2. Define and distinguish among testing, measurement, and evaluation.
3. Name the five key features to be considered in evaluating programs for the gifted and talented and the fifteen program requirements subsumed under those key features.
4. Name at least ***six*** important questions which should be asked in evaluating each of the initiatory, developmental and integrated models for programs for the gifted and talented.

Bibliography

Level A

Gallagher, J. J., *Teaching the Gifted Child*. (Second Edition). Boston: Allyn and Bacon, 1975, ch. 2 or

Popham, W. J., *Evaluating Instruction*. Englewood Cliffs, N. J.: Prentice-Hall, 1973 or

Renzulli, J. S., *A Guidebook for Evaluating Programs for the Gifted and Talented*. Ventura: (California) Ventura County Superintendent of Schools Office, 1975 or

Thorndike, R. L. and Hagen, E., *Measurement and Evaluation in Psychology and Education*. New York: Wiley, 1969, ch. 1, 2, and 6 or

Educational Evaluation. New Roles, New Means. 68th Yearbook of the National Society for the Study of Education, Part II. Chicago: University of Chicago, 1969, ch. 2, 3, 7, 10, 11, 16.

Level B

1. Anderson, S. B., "Accountability: What, Who, and Whither?" *School Management*, 1971, 15, 28-29.
2. Eash, M. J., *Issues in Evaluation and Accountability in Special Programs for Gifted and Talented Children*. Tallahassee, Florida: Florida Department of Education, 1973.
3. Gowan, J. C., "The California Criterion Scorecard for Evaluation of Gifted Child Programs." *Gifted Child Quarterly*, 1965, 9, 156-158 and 160. (Also In: Gowan and Torrance, 1971).
4. Lieberman, M., "An Overview of Accountability." *Phi Dela Kappan*, 1970, 52, 194-195.
5. Renzulli, J. S., "Identifying Key Features in Programs for the Gifted." *Exceptional Children*, 1968, 35, 217-221.

Level C

Abramson, D. A., "Curriculum Research and Evaluation." *Review of Educational Research*, 1966, 36, 388-395.

Anastasi, A., *Psychological Testing*. New York: Macmillan, 1968.

Banta, C. O., "Sources of Data for Program Evaluation." *Adult Education*, 1955, 5, 227-230.

Barro, S. M., "An Approach to Developing Accountability Measures for the Public Schools." *Phi Delta Kappan*, 1970, 52, 196-205.

Cronbach, L. J., "Course Improvement Through Evaluation." *Teachers College Record*, 1963, 64, 672-683.

Ebel, R. L., *Essentials of Educational Measurement*. Englewood Cliffs, N. J.: Prentice-Hall, 1972.

Frankel, A. A., "A Substitute for Tests." *Phi Delta Kappan*, 1969, 1, 345.

Gross, F. P. and Sabatino, D. A., "Role of the School Psychologist in Evaluating an Experimental Program for Gifted Students." *Journal of School Psychology*, 1965, 3, 56-61.

Jackman, W. D. and Bachtold, L. M., "Evaluation of a Seminar for Gifted Junior High School Students." *Gifted Child Quarterly*, 1969, 13, 163-168.

Lessinger, L. M., "Engineering Accountability for Results in Public Education." *Phi Delta Kappan*, 1970, 52, 217-225.

Lessinger, L. M., *Every Kid a Winner: Accountability in Education*. Palo Alto: SRA, 1970.

MacDonald, B., Gammie, A., and Nisbet, J., "The Careers of a Gifted Group." *Educational Research*, 1964, 6, 216-219.

Mager, R. F., *Goal Analysis*. Bellmont, California: Fearon, 1972.

Ogdon, D. P., "Extrapolated WISC-R IQs for Gifted and Mentally Retarded Children." *Journal of Consulting and Clinical Psychology*, 1975, 43(2), 216.

Pringle, R. G., Webb, J. G., Warner, D. A., and Peterson, A. V., "Innovative Education for Gifted Children in Rural Elementary Schools." *Elementary School Journal*, 1972, 73, 79-84.

Renzulli, J. S. and Ward, V. S., *Diagnostic and Evaluative Scales for Differential Education of the Gifted (DFSDEG)*. Storrs: University of Connecticut, 1970.

Rice, J. P. and Banks, G., "Opinions of Gifted Students Regarding Secondary School Programs." *Exceptional Children*, 1967, 34, 269-273.

Scriven, M., "The Methodology of Evaluation." In: Tyler, R., Gagne, R., and Scriven, M., *Perspectives of Curriculum Evaluaton*. Chicago: Rand-McNally, 1967.

Stake, R., "The Countenance of Educational Evaluation." *Teachers College Record*, 1967, 68, 523-541.

Wittrock, M. and Wiley, D., (Eds.), *The Evaluation of Instruction: Issues and Problems*. New York: Holt, Rinehart, and Winston, 1970.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended maximum point values for each project are given in parentheses.

A. General Projects

1. After completing the Level A and B readings, you may wish to select any of the projects or activities from the Basic Project List, page 16.
2. Based upon the Level B readings for this Topic, compare the evaluation criteria proposed by Renzulli (1968) with those proposed by Gowan (1965). Report on the similarities and differences. (3 points)
3. Survey school districts in your area in which there are special programs for gifted and talented students. Attempt to find out as much as possible about the evaluation plans for such programs. Compare the information you obtain with the evaluation guidelines presented in this Topic. (3 points)

B. Advanced Projects

1. Prepare for yourself a complete copy of any set of evaluation guidelines for programs for the gifted and talented and after locating a school program, attempt to apply the guidelines to evaluate the program as completely as possible. Prepare a report on the result of your evaluation. (5 points)
2. Prepare a written review of different models for curriculum or program evaluation, and compare your findings with the specific evaluation guidelines for programs for the gifted and talented presented in this Topic. Do these guidelines relate more readily and completely to some evaluation models than to others? What other guidelines and procedures might be suggested by other evaluation models? (5 points)
3. Make a list of all the possible criteria you can identify that might provide useful evidence concerning the value or effectiveness of an educational program for the gifted and talented. (Include short- and long-range effects.) If possible, obtain additional suggestions from teachers, parents, and students, and compare the suggestions given by such groups with each other and with your list. (5 points)

C. Major Projects

1. Develop a comprehensive evaluation plan, following the guidelines in this Topic, for an educational program for the gifted and talented. Include specific recommendations about who should conduct the evaluation, when and how frequently evaluation data should be obtained, and sources of data for the evaluation. (6 points for developing plan; 3 additional for evidence of its use in evaluating a program)
2. Identify several problems that might arise from critical opposition to psychological testing and measurement within a community, and report on (1) how you might respond to the issues and (2) how and why an evaluation plan can and should include evidence from many different sources. Relate the issues and the responses specifically to evaluation of programs for the gifted and talented. (6 points)

Final Self-Quiz

1. Evaluation is _____

_____

2. Tell how "evaluation" differs from testing or measurement.
3. Name and explain briefly at least three ways in which "accountability" concerns are relevant to educational programs for the gifted and talented.
4. Name the five key features and for each one, the associated program requirements, for evaluating differential education programs for the gifted and talented.
5. According to Eash, what questions should be asked in each of the following nine areas for evaluating programs for the gifted and talented:

	Initiatory	Developmental	Integrated
Effort	(1)	(4)	(7)
Effect	(2)	(5)	(8)
Efficiency	(3)	(6)	(9)

Relation of Final Self-Quiz to Objectives and Readings		
Question	Objective	References
1	2	Level A
2	2	Level A
3	1	Level B (1, 3, 4)
4	3	Level B (5)
5	4	Level B (2)

UNIT III

Creativity in Education Topic Guides

TOPIC GUIDE XII:

CREATIVITY—
THEORIES AND DEFINITIONS

Topic Organizer

What is creativity? How can it be defined and distinguished from other aspects of human behavior? From what sources do we believe the person's creative potential emerges? These fundamental questions of definitions and theoretical explanations provide the foundation upon which the study of creativity in psychology and education builds.

Minimum Content Objectives

1. Define the distinguishing characteristics of theories of creativity in each of the following groups:
   (a) cognitive, rational, semantic approaches
   (b) personality and environmental approaches
   (c) mental health approaches
   (d) Freudian and neo-Freudian approaches
   (e) "psychedelic" approaches.
2. Identify the principal ideas of illustrative theories for each of the five groups of theories.
3. Given any two or more representative theories from the five groups, compare the theories using the following criteria:
   (a) empirical evidence supporting the theory
   (b) disconfirming evidence
   (c) limitations of the theories
   (d) generation of new hypotheses.
4. Identify several problems in translating logical or theoretical definitions of creativity into measureable (or operational) terms.
5. Describe the differences among definitions of creativity which arise from differential emphasis on "persons, products, processes, and press."

Rationale

Creativity is a very complex subject, and it has proven to be quite difficult for philosophers and psychologists to study. In great part, the difficulty stems from our problems in understanding the nature and origins of creative talent. As a result, the literature of creativity contains many different theories and definitions, no one of which seems to satisfy everyone (and more than a few of which satisfy almost no one). To investigate this Topic could be an entire course of study in its own right, although you will probably be able only to allow yourself an introductory survey of some of the basic issues and approaches.

In the first objective, you will survey the major theoretical approaches to the study of creativity. For this Topic, these have been organized into five general groups, each of which subsumes a number of specific theoretical statements. As you work on Objectives 2 and 3, you will have an opportunity to study in somewhat more detail examples of theories from these five groups.

(Because of the complexity of the material in this Topic, you will note that the ***Bibliography*** section of the Topic has been arranged somewhat differently. The ***Level A*** readings are ***general*** readings. The ***Level B*** and ***Level C*** readings have been combined, and organized by sub-topics. Within each sub-topic, one or more basic papers has been marked with an asterisk, to denote readings which might be most valuable for the introductory student.)

As you work on Objective 4, you will study some of the specific problems that arise when a logical (or theoretical) definition of creativity is translated into ***operational*** terms (***i.e.***, terms which permit effective measurement of the concept being defined). While some people earnestly believe that creativity is such an esoteric phenomenon as to be unmeasurable, we believe that the psychologist and the educator should be committed to making efforts to find valid and reliable ways for recognizing and assessing creative ability.

In Objective 5, four different approaches to defining creativity will be examined, drawing from the work of Rhodes (in the Level A references). These categories for analyzing definitions will assist you in understanding how different points of view about the ***nature*** of creativity are reflected in specific definitions.

Pre-Instruction Self-Quiz

1. Describe the general, distinguishing characteristics of theories of creativity in each of these five groups:
   (a) cognitive, rational, semantic
   (b) personality/environmental
   (c) mental health
   (d) Freudian/neo-Freudian
   (e) psychedelic.
2. Describe briefly an example of one theory from each of the five groups identified in Question 1.
3. For each of the theories described in Question 2, summarize briefly the major research evidence bearing on the theory (for support and disconfirmation).
4. Describe at least three problems that are encountered in developing measurement procedures which adequately represent logical or theoretical definitions of creativity.
5. Explain briefly the meaning of the following four categories of definitions of creativity: person, product, process, press.

Bibliography

Level A

Davis, G. A., *Psychology of Problem Solving: Theory and Practice*. New York: Basic Books, 1973, ch. 1-5. or

Gallagher, J. J., *Teaching the Gifted Child*. (Second Edition). Boston: Allyn and Bacon, 1975, ch. 9. or

Gowan, J. C., *Development of the Creative Individual*. San Diego: Robert Knapp, 1972, ch. 1. or

Kaiser Aluminum News, Vol. 25, No. 3 (1968), "You and Creativity." Single copies available from: Editor, Kaiser Aluminum News, 866 Kaiser Center, Oakland, CA 94604. or

Rhodes, M., "An Analysis of Creativity." *Phi Dela Kappan*, 1961, 42, 305-310.

Level B (*denotes readings most valuable for introductory students.)

1. General Papers and Criticism

Anderson H. H., (Ed.), *Creativity and Its Cultivation*. New York: Haper and Row, 1959, Especially see ch. 5, by Rollor May; ch. 6, by Carl R. Rogers (Also In: Parnes and Harding); ch. 7, by Abraham Maslow; and ch. 9, 15, by Anderson.

Ausbel, D. P., *Educational Psychology: A Cognitive View*. New York: Holt, Rinehart and Winston, 1968, ch. 16.

Ausubel, D. P., "Creativity, General Creative Abilities, and the Creative Individual." *Psychology in the Schools*, 1964, 1, 344-347.

Burnham, W. H., "Individual Differences in the Imagination of Children." *Pedagogical Seminary*, 1892, 2, 204-225.

Dewey, John, *How We Think*. Boston: C. D. Heath, 1933.

*Drevdahl, J. E., "Factors of Importance for Creativity." *Journal of Clinical Psychology*, 1956, 12, 21-26.

*Eisner, E. W., *Think With Me About Creativity*. Dansville, New York: F. A. Owen, 1964.

Ghiselin, B., (Ed.), *The Creative Process*. New York: Mentor, 1955.

Golann, S. E., "Psychological Study of Creativity." *Psychological Bulletin*, 1963, 60, 548-565.

Jackson, P. W. and Messick, S., "The Person, the Product, and the Response: Conceptual Problems in the Assessment of Creativity." *Journal of Personality*, 1965, 33, 309-329.

Khatena, J., "Vividness of Imagery and Creative Self Perceptions." *Gifted Child Quarterly*, 1975, 19(1), 33-37.

*Kreuter, K. and Kreuter, G., "The Usefull Genius: Intelligence, Creativity and American Values." *Saturday Review*, October 17, 1964, 64-67.

*Marksberry, M. L., *Foundations of Creativity*. New York: Harper and Row, 1963.

McNemar, Q., "Lost: Our Intelligence? Why?" *American Psychologist*, 1964, 18, 871-872.

Mueller, R. J., "Can the Public School Foster Creativity?" *Saturday Review*, December 19, 1964, 48-49, 64.

Newell, A., Shaw, J. and Simon, H., "The Processes of Creative Thinking." (In Gruber, Terrell, and Wertheimer's *Contemporary Approaches to Creative Thinking*, 1962).

*Rugg, Harold, *Imagination*. New York: Harper and Row, 1963.

*Russell, David, *Children's Thinking*. Waltham, Mass.: Blaisdell, 1956, Ch. 1 and 11.

*Smith, J. A., *Setting Conditions for Creative Teaching*. Boston: Allyn and Bacon, ch. 1.

Taylor, C. W. and Barron, F., (Eds.), *Scientific Creativity: Its Recognition and Development*, New York: Wiley, 1963.

Taylor, C. W., (Ed.), *Creativity: Progress and Potential*. New York: McGraw-Hill, 1964.

Taylor, C. W., (Ed.), *Widening Horizions in Creativity*. New York: Wiley, 1964.

Wallach, M. A., "Creativity." (In: Mussen, P. H., (Ed.), *Carmichael's Manual of Child Psychology*, Vol 1, New York: Wiley, 1970.

*Wallach, M. A., *The Intelligence/Creativity Distinction*. New York: General Learning Press, 1971.

2. Cognitive, Rational, Semantic Approaches

Dewey, J., *How We Think*. Boston: D. C. Heath, 1933.

*Guilford, J. P., "Creativity." *American Psychologist*, 1950, 5, 444-454.

*Guilford, J. P., "Intellectual Factors in Productive Thinking." (In: Aschner, M. J. and Bish, C. E., (Eds.), *Productive Thinking in Education*. Washington: NEA, 1965.

Guilford, J. P., *The Nature of Human Intelligence*. New York: McGraw-Hill, 1967 (particularly ch. 6, 14).

Guilford, J. P., *Intelligence, Creativity and Their Educational Implications*. San Diego: Robert R. Knapp, 1968.

*Guilford, J. P., "Creativity: Yesterday, Today and Tomorrow." *Journal of Creative Behavior*, 1967, 1, 3-14.

Guilford, J. P. and Hoepfner, R., *The Analysis of Intelligence*. New York: McGraw-Hill, 1971.

Koestler, A., *The Act of Creation*. New York: Macmillian, 1964.

*Maltzman, I., "On the Training of Originality." *Psychology Review*, 1960, 67, 229-242.

*Mednick, S. A., "The Associative Basis of the Creative Process." *Psychological Review*, 1962, 69, 220-232. (also see: ch. 5 in Taylor's *Widening Horizions in Creativity*)

*Osborn, A. F., *Applied Imagination*. (Third Edition) New York: Scribners, 1963.

*Parnes, S. J., *Creative Behavior Guidebook*. New York: Scribners, 1967.

*Torrance, E. P., *Guiding Creative Talent*. Englewood Cliffs: Prentice-Hall, 1962.

*Torrance, E. P., *Education and the Creative Potential*. Minneapolis: University of Minnesota, 1963. (particularly ch. 1-3)

*Torrance, E. P., *Rewarding Creative Behavior*. Englewood Cliffs: Prentice-Hall, 1963. (particularly ch. 1)

*Torrance, E. P., "Scientific Views of Creativity and Its Development." *Daedalus*, 1965, 94, 663-681.

Torrance, E. P., *Torrance Tests of Creative Thinking: Worms and Technical Manual*. Princeton: Personal Press, 1966, (particularly ch. 1, 2)

*Torrance, E. P., *Encouraging Creativity in the Classroom*. Dubuque, Iowa: William C. Brown, 1970.

3. Personality and Environmental Approaches

Anderson, H. H., "Creativity and Personality Development." (In: Anderson, H. H., (Ed.), *Creativity and Its Cultivation*. New York: Harper and Row, 1959.

Barron, F., *Creativity and Personal Freedom*. Princeton: Van Nostrand, 1968.

*Barron, F., *Creative Person and Creative Process*. New York: Holt, Rinehart, and Winston, 1969. (particularly ch. 1-7)

Baron, F., "Originality in Relation to Personality and Intellect." *Journal of Personality*, 1957, 25: 730-742. (Also In: Barbe and Renzulli, 1975)

Barron, F., "The Disposition Towards Orginality." *Journal of Abnormal and Social Psychology*, 1955, 51, 478-485. (Also In: Taylor, C. W. and Barron, F., *Scientific Creativity: Its Recognition and Development*. New York: Wiley, 1963, ch. 11)

*Barron, F., "The Psychology of Imagination." *Scientific American*, 1958, 199, 151-166.

Barron, F., "The Needs for Order and Disorder as Motives in Creative Activity." (In: Taylor and Barron, *Scientific Creativity: Its Recognition and Development*, 1963, ch. 12)

*Crutchfield, R. S., "Creativity and Conformity." (In: Gruber, H. E., Terrell, G., and Werthmeimer, M., (Eds.), *Contemporary Approaches to Creative Thinking*. New York: Atherton, 1962.

Helson, R., "Personality of Women with Imgainative and Artistic Interests." *Journal of Personality*, 1966, 34, 1-25.

*MacKinnon, D. W., "The Nature and Nuture of Creative Talent." *American Psychologist*, 1962, 17, 484-495.

*MacKinnon, D. W., "Personality and the Realization of Creative Potential." *American Psychologist*, 1965, 20, 273-281. (Also In: Barbe and Renzulli, 1975)

MacKinnon, D. W., "The Highly Effective Individual." *Teachers College Record*, 1960, 61(7). (Also In: Mooney and Razik, 1967)

Sinott, E. W., "The Creativeness of Life." (In: Anderson, H. H., (Ed.), *Creativity and Its Cultivation*. New York: Harper and Row, 1959.

Stein, M. I., "Creativity and Culture." *Journal of Psychology*, 1953, 36, 311-322.

*Taylor, I. A., "A Transactional Approach of Creativity and Its Implications for Education." *Journal of Creative Behavior*, 1970, 5, 190-198.

Taylor, I. A., *A Theory of Creative Transactualization*. Buffalo, N.Y.: Creative Education Foundation, 1972.

4. Mental Health Approaches

Maslow, A. H., *Motivation and Personality*. New York: Harper and Row, 1954.

Maslow, A. H., *Toward a Psychology of Being*. Princeton: Van Nostrand, 1962.

*Maslow, A. H., "The Creative Attitude." (In: Mooney, R. and Razik, T., (Eds.), *Exploration in Creativity*, New York: Harper and Row, 1967.

*Maslow, A. H., "Creativity in Self-Actualizing People." (In: Anderson, H. H., (Ed.), *Creativity and Its Cultivation*. New York: Harper and Row, 1959.

May, R., "The Nature of Creativity." (In: Anderson, H. H., (Ed.), *Creativity and Its Cultivation*. New York: Harper and Row, 1959).

*Rogers, C. R., "Toward a Theory of Creativity." *ETC: Review of General Semantics*, 1954, 11, No. 4, 249-260. (Also In: Parnes and Harding, *Source Book for Creative Thinking*, New York: Scribners, 1962; In: Anderson, H. H., (Ed.), *Creativity and Its Cultivation*, New York: Harper and Row, 1959; and in Rogers, C. R., *On Becoming a Person*. Boston: Houghton-Mifflin, 1959.)

*Rogers, C. R., *Freedom to Learn*. Columbus: Merrill, 1969.

5. Freudian and Neo-Freudian Approach

Freud, S., *Leonardo Da Vinci: A Study in Psychosexuality*. New York: Random House, 1947, originally published in 1910.

Freud, S., *On Creativity and the Unconscious*. New York: Harper and Row, 1958, originally, published in 1925.

Fromm, E., "The Creative Attitude." (In: Anderson, H. H., (Ed.), *Creativity and Its Cultivation*. New York: Harper and Row, 1959.

Horney, K., *Neurosis and Human Growth*. New York: Norton, 1950.

Jung, C. G., *Psychology of the Unconscious*, (translated by Hinkle, B.) New York: Dodd, Mead, 1916.

Kris, E., *Psychoanalytic Explorations in Art*. New York: International Universities Press, 1952.

Kubie, L., *Neurotic Distortion of the Creative Process*. Lawrence: University of Kansas Press, 1958.

Schachtel, E. C., *Metamorphis*. New York: Basic Books, 1959.

6. Psychedelic Approaches

Aaronson, B. and Osmond, H., *Psychedelics*. New York: Anchor, 1970.

*Anderson, M. S. and Savary, L., *Passages: A Guide for Pilgrims of the Mind*. New York: Harper and Row, 1972.

Arieti, S., *The Intrapsychic Self*. New York: Basic Books, 1967.

Harman, W. and Fadiman, J., "Selective Enhancement of Specific Capacities Through Psychedelic Training." (In: Aaronson and Osmond, 1970, 239-257.)

*Houston, J., "The Psychenaut Program: An Exploration Into Some Human Potentials." *Journal of Creative Behavior*, 1973, 253-278.

Huxley, A., *The Doors of Perception*. New York: Harper and Row, 1954.

Leary, T., "The Effects of Test Score Feedback on Creative Perfomrance and of Drugs on Creative Experience." (In: Taylor, C. W., (Ed.), *Widening Horizons of Creativity*, New York: Wiley, 1964).

*Leary, T., *High Priest*. New York: World, 1968.

*Leary, T., Metzner, R., and Alpert, R., *The Psychedelic Experience*. New Hyde Park, N. Y.: University Press, 1964.

Masters, R. and Huston, J., *Mind Games*. New York: Dell, 1972.

Tart, C. T., (Ed.), *Altered States of Consciousness*. New York: Wiley, 1969.

*Weil, A., *The Natural Mind*. Boston: Houghton-Mifflin, 1972.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended maximum point values are given in parentheses.

A. General Projects

1. After completing the Level A and B readings, you may wish to select any of the projects from the Basic Project List, page 16.
2. Select any one of the theories of creativity from any of the five groups presented in this Topic. Prepare a report which includes the following: (a) a brief summary of the theorist's definition of creativity; (b) implications of the theory for recognizing individual differences in creativity; (c) implications of the theory for education. (3 points)
3. Select any two of the theoretical explanations of creativity presented in this Topic and compare them critically. Include in your comparison similarities and differences with regard to the following: (a) sources of creative potential; (b) ways in which creativity can be facilitated or inhibited; (c) effects of creativity upon the individual; (d) basic assumptions of each theory about "human nature". (3 points)

B. Advanced Projects

1. Develop, in some medium of your own choice, an original way of expressing the fundamental ideas and concepts of any theory or definition of creativity presented in this Topic. (5 points)
2. Select any of the theoretical approaches to creativity included in this Topic, and prepare a comprehensive, critical review of the literature on that theory. Include additional writing by the author to extend or modify the theory, critical reviews or analyses of the theory by other scholars, and research testing hypotheses derived from the theory. (5 points)
3. Identify some curriculum materials which purport to be "creative" or to foster creativity among the pupils. Review the content of the materials carefully, and prepare a report in which you relate the materials to a particular theoretical understanding of creativity. Include specific illustrations from the curriculum material to demonstrate clearly their relationship to the theory. (4 points)

C. Major Projects

1. Select an area of conflict between two theoretical explanations of creativity (i.e., an issue about which the two theories offer different explanations). Design an experiment which would provide a "critical" test (i.e., a test in which the hypothesis from one theory would be confirmed and the other disconfirmed). (7 points)
2. Select any of the theories presented in this chapter and make up a program based upon the theory to help an individual increase in creative ability. You should include evidence that such an effort is consistent with the basic ideas of the theory, and you should demonstrate that the contents of your programs are clearly relatable to the theory. Report on the effects you think the program would have for subjects of various ages, and how you would assess its success or failure. (7 points)

3. Develop your own personal definition and theoretical analysis of creativity. Include in your report your definition; the basic assumptions with which you begin; an outline of the fundamental concepts of your theory, at least partially elaborated; a critical comparison of your theory to other selected theories; and, a statement of some testable hypotheses which would be generated by your theory. (8 points)

Final Self-Quiz

1. Briefly explain the major ideas of any four of the following theoretical approaches to the study of creativity:
   (a) Parnes' creative problem solving
   (b) Leary's altered states of consciousness
   (c) Mednick's remote associations
   (d) Koestler's bisociative processes
   (e) Guilford's structure of intellect
   (f) MacKinnon's studies of architects
   (g) Maslow's self-actualizing person.
2. For each of the four theories you selected in Question 1, classify it using the five general categories of theories (cognitive-rational-semantic; personality/environmental; mental health; Freudian/neo-Freudian; psychedelic) and using one of the four definitional emphases (person, product, process, press).
3. For any two of the seven approaches identified in Question 1, indicate the following: (a) the effect the theory has had on the generation of research; (b) a brief summary of research evidence supporting the theory; and (c) the general way in which the approach has translated its conceptual definition of creativity into measurement or assessment procedures.

Relation of Final Self-Quiz to Objectives and Readings

Question	Objective	References
1	1	Appropriate choices from Level B: (a) sub-topic B-2 (b) sub-topic B-6 (c) sub-topic B-2 (d) sub-topic B-2 (e) sub-topic B-2 (f) sub-topic B-3 (g) sub-topic B-4
2	1, 2, 5	Level A (Gowan, Rhodes) Level B - choices as above
3	3, 4	Level A (Davis, Gowan) Level B (as above)

TOPIC GUIDE XIII:

IDENTIFICATION AND MEASUREMENT OF CREATIVITY

Topic Organizer

In this Topic, we are concerned with the problems of recognizing creative abilities. How can creativity be identified and measured? Is it different from other abilities, such as intelligence? What kinds of tests, checklists, rating scales, and other inventories have been developed to help us assess creativity? What are the major problems that are still unsolved?

Minimum Content Objectives

1. Describe several existing measures which purport to assess creativity, identify the strengths and limitations of each, and explain the theory or definition of creativity upon which the test is based.
2. Describe several major problems and unresolved issues in the measurement of creativity, including problems of validity, reliability, and usability.
3. Describe several non test assessment procedures which purport to assess creative potential, and identify the strengths and weaknesses of each.
4. Describe and evaluate the findings of several research investigations of aspects of the relationship between creativity and intelligence.
5. Describe how theory and research on the creativity-intelligence relationship may be influenced by differences in basic assumptions about the nature of creativity and intelligence, and in resulting procedures for assessing each variable.

Rationale

Since the early 1950's, the amount of writing about creativity among psychologists and educators has increased at an extraordinary rate. Perhaps no topic has received more attention in this period, however, than that of the assessment of creativity (along with its distinction from other concepts, such as intelligence). Numerous tests, inventories, and rating scales have been developed and used in research studies, attempting to find a measurement procedure that would be psychologically adequate and logically sound. Many issues have also emerged at a more basic level, concerning the very nature of the "creativity" for which the tests search. These issues cannot always be clearly separated from the concerns of theory and definition (see Topic 12), although there has been a general lack of work on the measurement problem stemming from clear theoretical foundations. As a result, today there are still many views and definitions, many tests and instruments, and many controversial issues. This contributes both to the difficulty of organizing the area

for systematic study, and to the excitement of reading and working in a field in which there are so many unanswered questions and fascinating possibilities.

As you work on Objective 1, you will encounter first hand a number of instruments which seek to assess various aspects of creativity. Each reflects, and usually quite substantially, the definition and the basic assumptions of its creator—sometimes explicity, occasionally not. Each also is confronted with problems and challenges: does it "really" measure something that any person of good sense would call creativity? Does it measure accurately? Can it be used, scored, and interpreted readily?

These same issues, which in more formal, psychological terms are the problems of validity, reliability, and usability, can be applied, not only to any single test or procedure, but to provide a ***general*** framework for analyzing many of the recurring problems in the area as a whole. In Objective 2, therefore, you will study these problems in their general form, as they must be resolved before any adequate identification procedure can be established.

While Objective 1 focuses primarily upon ***tests*** for measuring creativity, many psychological and educational researchers have attempted to utilize other ways of obtaining information about a person's creative ability. Thus, in Objective 3, you will study some ***non-test*** identification procedures that have been proposed for assessing creativity. These include rating scales, observation scales and checklists, self-report surveys, and biographical inventories.

In Objectives 4 and 5, you will study the controversial issues relating to the relationship (or lack of one) between "creativity" and "intelligence." In Objective 4, you will study some of the research studies in which specific aspects of this problem have been investigated. In Objective 5, you will review some of the problems that influence our ability to interpret this research evidence accurately, including such issues as methodological factors, test directions and conditions, and variations in basic definitions of the variables being studied.

This is an area in which there are many opportunities for significant, new research efforts. It is relatively unimportant, however, merely to persist in conducting studies which correlate some new measure which purports to measure creativity with an IQ test or with another "creativity test." Instead, our attention must turn to some of the more fundamental problems of validity, reliability, and usability. Areas of needed research are therefore also surveyed in the basic readings for this Topic. While, at the present time, there does not appear to exist any single instrument that is universally accepted for the assessment of creativity in the individual, it will nonetheless be valuable for the educator to see the kind and range of tests and inventories that are being developed. A knowledge of such instruments may enable teachers, parents, counselors, and school psychologists better to be alert to indications of creative talent among their students.

Pre-Instruction Self Quiz

1. Name at least three currently available psychological tests which purport to measure some dimension of creative ability.
2. For each of the tests named in Question 1, identify at least two advantages and two disadvantages, as reflected in research and critical reviews.
3. Name three problems in measuring creativity, upon which new research is needed, for each of these areas: validity, reliability, and usability.
4. Name at least two non-test procedures which purport to assess creativity, and identify the advantages and disadvantages of each.
5. Summarize briefly the current status of research and theory concerning the relationship of creativity and intelligence. Include consideration of the positions of J. P. Guilford and M. A. Wallach.

Bibliography

Level A

Davis, G. A., *Psychology of Problem Solving: Theory and Practice*. New York: Basic Books, 1973, Appendixes A and B. or

Journal of Creative Behavior, 1968, Vol. 2, No. 3, (entire issue on measurement).

Level B

1. Select readings on specific tests and assessment procedures from various categories within the Level C reference lists. (The basic sources in each group are marked with an asteristk.)
2. Jackson, P. and Messick, S., "The Person, the Product, and the Response: Conceptual Problems in the Assessment of Creativity." *Journal of Personality*, 1965, 33, 309-329.
3. Treffinger, D. J. and Poggio, J. P., "Needed Research on the Measurement of Creativity." *Journal of Creative Behavior*, 1972, 6, 253-267.
4. Treffinger, D. J., Renzulli, J. S., and Feldhusen, J. F., "Problems in the Assessment of Creative Thinking." *Journal of Creative Behavior*, 1971, 5, 104-112. (Also In: Barbe and Renzulli, 1975)
5. Guilford, J. P., *The Nature of Human Intelligence*. New York: McGraw-Hill, 1967, ch. 6.
6. Wallach, M. A., *The Intelligence/Creativity Distinction*. New York: General Learning Press, 1971.

Level C (* denotes readings most valuable for introductory students.)

1. General Issues: Measuring Creativity

Brogden, H. E. and Sprecher, T. B., "Criteria of Creativity." (In: Taylor, C. W., (Ed.), *Creativity: Progress and Potential*. New York: McGraw-Hill, 1964.

Bruch, C. B., "Assessment of Creativity in Culturally Different Children." *Gifted Child Quarterly*, 1975, 19(2), 164-174.

Crockenberg, S. B., "Creativity Tests: A Boon or Boondoggle for Education?" *Review of Educational Research*, 1972, 42, 27-45.

*Davis, G. A., "Current Status of Research and Theory in Human Problem Solving." *Psychological Bulletin*, 1966, 66, 36-54.

Fredericksen, N., Evans, F. R., and Ward, W. A., "Development of Provisional Criteria for the Study of Scientific Creativity." *Gifted Child Quarterly*, 1975, 19(1), 60-65.

*Guilford, J. P., "Some Misconceptions Regarding Measurement of Creative Talents." *Journal of Creative Behavior*, 1971, 5, 77-87.

Nicholls, J. G., "Creativity In the Person Who Will Never Produce Anything Original and Useful." *American Psychologist*, 1972, 27, 717-727.

Skager, R. W., Schultz, C. B., and Klein, S. P., "Points of View About Preference as Tools in the Analysis of Creative Products." *Perceptual and Motor Skills*, 1966, 22, 83-84.

2. Guilford's Approach

Gershon, A., Guilford, J. P., and Merrifield, P. R., "Figural and Symbolic Divergent-Production Abilities in Adolescent and Adult Populations." Los Angeles: Psychological Labratory, U. S. C., 1963.

Guilford, J. P., Frick, J., Christensen, P., and Merrifield, P., "A Factor-Analytic Study of Flexibility in Thinking." Los Angeles: Psychological Laboratory, U. S. C., 1957.

Guilford, J. P., Merrifield, P., and Cox, A. B., "Creative Thinking in Children at the Junior High School Level." Los Angeles: Psychological Laboratory, U. S. C., 1961.

Guilford, J. P., "Creativity: Its Measurement and Development." (In: Parnes, S. J. and Harding, H. (Eds.), *Source Book for Creative Thinking*. New York: Scribners, 1962.

*Guilford, J. P., "Factors That Aid and Hinder Creativity." *Teachers College Record*, 1962, 63, 380-392.

*Guilford, J. P., *The Nature of Human Intelligence*. New York: McGraw-Hill, 1967, ch. 6.

*Guilford, J. P., Hendricks, M., and Hoepfner, R., "Solving Social Problems Creatively." *Journal of Creative Behavior*, 1968, 2, 155-164.

Guilford, J. P. and Hoepfner, R., "Sixteen Divergent-Production Abilities at the Ninth-Grade Level." *Multivariate Behavioral Research*, 1966, 1, 43-66.

Guilford, J. P. and Hoepfner, R., *The Analysis of Intelligence*. New York: McGraw-Hill, 1971.

Horn, J. L., "Review of J. P. Guilford's, *The Nature of Human Intelligence*." *Psychometrika*, 1970, 35, 273-277.

Horn, J. L. and Knapp, J. R., "On The Subjective Character of the Empirical Base of Guilford's Structure of Intellect Model." *Psychological Bulletin*, 1973, 80, 33-43.

Kettner, N. W., Guilford, J. P., Christensen, P., "A Factor-Analytic Study Across the Domains of Reasoning, Creativity, and Evaluation." *Psychological Monographs*, 1959, 73, whole number 479.

Merrifield, P., Guilford, J. P., Christensen, P., and Frick, J., "A Factor-Analytic Study of Problem-Solving Abilities." Los Angeles: Psychological Laboratory, U. S. C., 1964.

Merrifield, P., Guilford, J. P., and Gershon, A., "The Differentiation of Differentiaion of Divergent Production Abilities at the Sixth-Grade Level." Los Angeles: Psychological Laboratory, U. S. C., 1963.

Merrifield, P., Gardner, S. F., and Cox, A., "Aptitude and Personality Measures Related to Creativity in Seventh-Grade Children." Los Angeles: Psychological Laboratory, U. S. C., 1964.

Wilson R. C., Guilford, J. P., and Christensen, P. R., "The Measurement of Individual Differences in Originality." *Psychological Bulletin*, 1953, 50, 362-370. (Also In: Barebe and Renzulli, 1975)

3. Mednick's Approach

Datta, L., "A Note on the RAT, U. S. Culture, and Creativity." *Journal of Applied Psychology*, 1964, 48, 184-185.

*Davis, G. A. and Belcher, T., "How Shall Creativity Be Measured?" *Journal of Creative Behavior*, 1971, 5, 153-161.

*Guilford, J. P., "Some Misconceptions Regarding Measurement of Creative Talents." *Journal of Creative Behavior*, 1971, 5, 77-87.

Houston, J. and Mednick, S., "Creativity and the Need for Novelty." *Journal of Abnormal and School Psychology*, 1963, 137-141.

Mednick, M. T., "Research Creativity in Psychology Graduate Students." *Journal of Consulting Psychology*, 1963, 27, 265-266.

*Mednick, S. A., "The Associative Basis of the Creative Process." *Psychological Review*, 1962, 69, 220-232.

*Mednick, S. A., "The Remote Associates Test." *Journal of Creative Behavior*, 1968, 2, 213-214.

Taft, R., and Rossiter, J., "The Remote Associates Test: Divergent or Convergent Thinking?" *Psychological Reports*, 1966, 19, 1313-1314.

Worthen, B. R. and Clark, P. M., "Toward an Improved Measure of Remote Associational Ability." *Journal of Educational Measurement*, 1971, 8, 113-123.

4. Torrance's Approach

Cropley, A. J., "A Five-Year Longitudinal Study of the Validity of Creative Tests." *Developmental Psychology*, 1972, 6, 119-124.

Harvey, G. J., Hoffmeister, J., Coates, C., and White, B., "A Partial Evaluation of Torrance's Test of Creativity." *American Educational Research Journal*, 1970, 7, 359-372.

[illegible] and Pankove, E., "Creative Ability Over a Five-Year Span." *Child Development*, [illegible]72, 43, 427-442.

Kogan, N. and Pankove, E., "Long Term Predictive Validity of Divergent Thinking Tests: Some Negative Evidence." *Journal of Educational Psychology*, 1974, 66, 802-810.

*Torrance, E. P., *Guiding Creative Talent*. Englewood Cliffs: Prentice-Hall, 1962, ch. 2, 3, and Appendix.

Torrance, E. P., "The Minnesota Studies of Creative Thinking, 1959-62." (In: Taylor, C. W., (Ed.), *Widening Horizons in Creativity*. New York: Wiley, 1964, ch. 10.

Torrance, E. P., *Torrance Tests of Creative Thinking: Norms and Technical Manual*. Princeton, N. J.: Personnel Press, 1966.

Torrance, E. P., "The Minnesota Studies of Creative Behavior: National and International Extensions." *Journal of Creative Behavior*, 1967, 1, 137-154.

*Torrance, E. P., "Examples of Rationales of Test Tasks for Assessing Creative Abilities." *Journal of Creative Behavior*, 1968, 2, 165-173.

Torrance, E. P., "Prediction of Adult Creative Achievement Among High School Seniors." *Gifted Child Quarterly*, 1969, 13, 71-81.

*Torrance, E. P., "Can We Teach Children to Think Creatively?" *Journal of Creative Behavior*, 1972, 6, 114-143.

*Torrance, E. P., "Predictive Validity of the Torrance Tests of Creative Thinking." *Journal of Creative Behavior*, 1972, 6, 236-252.

Torrance, E. P., "Creative Patterns and Peak Creative Achievements of Creative High School Students 12 Years Later." *Gifted Child Quarterly*, 1972, 16, 75-88.

Torrance, E. P. and Aliotti, N. C., "Sex Differences in Levels of Performance and Test-Retest Reliability on the Torrance Tests of Creative Thinking Ability." *Journal of Creative Behavior*, 1969, 3, 52-57.

Wallach, M. A., "Review of the Torrance Tests of Creative Thinking." *American Educational Research Journal*, 1968, 5, 272-281.

Wodtke, K. E., "Some Data on the Reliability and Validity of Creativity Tests at the Elementary School Level." *Educational and Psychological Measurement*, 1964, 24, 399-408.

5. Biographical and Self-Report Inventories

Bledsoe, J. and Khatena, J., "Factor Analytic Study of *Something About Myself*." *Psychological Reports*, 1973, 32, 1176-1178.

Institute for Behavioral Research in Creativity. *Alpha Biographical Inventory*. Greensboro, N. C.: Prediction Press, 1968.

Khatena, J., "Autobiography and the Creative Potential." *Gifted Child Quarterly*, 1969, 13, 225-258.

Khatena, J., "*Something About Myself*: A Brief Screening Device for Identifying Creatively Gifted Children and Adults." *Gifted Child Quarterly*, 1971, 15, 262-266.

Khatena, J., "Attitude Patterns as Providing Validity Evidence of *Something About Myself*." *Perceptual and Motor Skills*, 1972, 34, 563-564.

Schaefer, C. E., "The Prediction of Creative Achievement from a Biographical Inventory." *Educational and Psychological Measurement*, 1969, 28, 431-437.

Schaefer, C. E., *Biographical Inventory*. San Diego: Educational and Industrial Testing Service, 1970.

Schaefer, C. E., "Predictive Validity of the Biographical Inventory: Creativity: Five Year Follow-Up Study." *Psychological Reports*, 1972, 30, 471-476.

Schaefer, C. E. and Anastasi, A., "A Biographical Inventory for Identifying Creativity in Adolescent Boys." *Journal of Applied Psychology*, 1968, 52, 42-48.

*Schaefer, C. E. and Bridges, C. I., "Development of a Creativity Attitude Survey for Children." *Perceptual and Motor Skills*, 1970, 31, 861-862.

Taylor, C. W. and Ellison, R. L., "Biographical Predictors of Scientific Performance." *Science*, 1967, 155, 1075-1080.

*Torrance, E. P. and Khatena, J., "What Kind of Person Are You?: A Brief Screening Device for Identifying Creatively Gifted Adolescents and Adults." *Gifted Child Quarterly*, 1970, 14, 71-75. (Also In: Barbe and Renzulli, 1975)

*Torrance, E. P., Bruch, C. B., and Morse, J. A., "Improving Predictions of the Adult Creative Achievement of Gifted Girls by Using Autobiographical Information." *Gifted Child Quarterly*, 1973, 17, 91-95.

6. Khatena-Torrance: Using Sounds and Words.

*Khatena, J., "Onomatopoeia and Images: Preliminary Validity Study of a Test of Originality." *Perceptual and Motor Skills*, 1969, 28, 335-338.

Khatena, J., "Repeated Presentation of Stimuli and Production of Original Responses." *Perceptual and Motor Skills*, 1970, 30, 91-94.

*Khatena, J., "The Use of Analogy in the Production of Original Verbal Images." *Journal of Creative Behavior*, 1972, 6, 209-213.

Khatena, J., "Imagination and Production of Original Verbal Images." *Art Psychotherapy*, 1973, 1, 1-8.

*Khatena, J., "Imagination Imagery of Children and the Production of Analogy." *Gifted Child Quarterly*, 1973, 17, 98-102.

Khatena, J., "Imagination Imagery of Children and the Production of Analogy." *Gifted Child Quarterly*, 1975, 19(4), 310-315.

Khatena, J., "Vividness of Imagery and Creative Self Perceptions." *Gifted Child Quarterly*, 1975, 19(1), 33-37.

Khatena, J. and Torrance, E. P., *Thinking Creatively with Sounds and Words: Norms-Technical Manual*. Lexington, Mass.: Personnel Press, 1973.

Schaefer, C. E., "Onomatopoeia and Images: Further Evidence of Validity." *Perceptual and Motor Skills*, 1970, 31, 786.

Torrance, E. P., "Assessing Children, Teachers and Parents Against the Ideal Child Criterion." *Gifted Child Quarterly*, 1975, 19(2), 130-139.

Torrance, E. P., Khatena, J., and Cunningron, B. F., *Thinking Creatively with Sounds and Words*. Lexington, Mass.: Personnel Press, 1973.

7. Other Assessment Procedures

Flanagan, J. C., *Aptitude Classification Tests*. Chicago: Science Research Associates, 1953.

Flanagan, J. C., "Ingenuity Test." *Journal of Creative Bheavior*, 1968, 2, 215-216.

*MacKinnon, D. W., "Assessing Creative Persons." *Journal of Creative Behavior*, 1967, 1, 291-304.

Ray, W. S., *The Experimental Psychology of Original Thinking*. New York: Macmillan, 1967.

*Renzulli, J. S., Hartman, R. K., and Callahan, C. M., "Teacher Identification of Superior Students." *Exceptional Children*, 1971, 38, 211-214 and 243-248. (Also In: Barbe and Renzulli, 1975)

*Torrance, E. P., "Non-Test Indicators of Creative Talent Among Disadvantaged Children." *Gifted Child Quarterly*, 1973, 17, 3-9.

8. Methods of Testing and Test Administration Problems

Adams, J. C., "The Relative Effects of Various Testing Atmospheres on Spontaneous Felxibility: A Factor of Divergent Thinking." *Journal of Creative Behavior*, 1968, 2, 187-194.

*Boersma, F. J. and O'Bryan, K., "An Investigation of the Relationship Between Creativity and Intelligence Under Two Conditions of Testing." *Journal of Personality*, 1968, 36, 341-348.

Christensen, P., Guilford, J. P., and Wilson, R., "Relations of Creative Responses to Working Time and Instructions." *Journal of Experimental Psychology*, 1957, 53, 82-88.

Elkind, D., Deblinger, J., and Adler, D., "Motivation and Creativity: The Context Effect." *American Educational Research Journal*, 1970, 7, 351-358.

*Feldhusen, J. F., Treffinger, D. J., Van Mondfrans, A. P., and Ferris, D. R., "Relationship Between Academic Grades and Divergent Thinking Scores Derived from Four Different Methods of Testing." *Journal of Experimental Education*, 1971, 40, 35-40.

Kogan, N. and Morgan, F. T., "Task and Motivational Influences on the Assessment of Creative and Intellective Ability in Children." *Genetic Psychology Monographs*, 1960, 80, 91-127.

Skager, R. W., Schultz, C. B., and Klein, S., "Quality and Quantity of Accomplishments as Measures of Creativity." Princeton: *ETS, Research Bulletin*, 1964, 64-31.

Skager, R. W., Schultz, C., and Klein, C., "Points of View About Preference as Tools in the Analysis of Creative Products." *Perceptual and Motor Skills*, 1966, 22, 83-94.

*Van Mondfrans, A. P., Feldhusen, J. F., Treffinger, D. J., and Ferris, D. R., "The Effects of Instructions and Response Time on Divergent Thinking Test Scores." *Psychology in the Schools*, 171, 8, 65-81.

9. Creativity-Intelligence Controversy

Anastasi, A. and Schaefer, C. E., "Note on the Concepts of Creativity and Intelligence." *Journal of Creative Behavior*, 1971, 5, 113-116.

*Barron, F., *Creative Person and Creative Process*. New York: Holt, Rinehart, and Winston, 1969, ch. 4.

Boersma, F. J. and O'Bryan, K., "An Investigation of the Relationship Between Creativity and Intelligence Under Two Conditions of Testing." *Journal of Personality*, 1968, 36, 341-348.

Campbell, D. T. and Fiske, D. W., "Convergent and Discriminant Validation by the Multi-Trait–Multi-Method Matrix." *Psychological Bulletin*, 1959, 56, 81-105.

Cronbach, L. J., "Intelligence? Creativity? A Parsimonious Reinterpretation of the Wallach-Kogan Data." *American Educational Research Journal*, 1968, 5, 491-512.

Cropley, A. J., "Creativity and Intelligence." *British Journal of Educational Psychology*, 1966, 36, 259-266.

Damm, V. J., "Creativity and Intelligence: Research Implications for Equal Emphasis in High School." *Exceptional Children*, 1970, 36, 565-569.

Feldhusen, J. F., Treffinger, D. J., Van Mondfrans, A. P., and Ferris, D. R., "Relationship Between Academic Grades and Divergent Thinking Scores Derived from Four Different Methods of Testing." *Journal of Experimental Education*, 1971, 40, 35-40.

Feldman, D. H., "Faulty Construction: A Review of Wallach and Wing's, *The Talented Student*." *Contemporary Psychology*, 1970, 15, 3-4.

*Getzels, J. W. and Jackson, P. W., *Creativity and Intelligence*. New York: Wiley, 1962.

Guilford, J. P. and Hoepfner, R., "Creative Potential as Related to Measures of IQ and Verbal Comprehension." *Indian Journal of Psychology*, 1966, 41, 7-16.

*Guilford, J. P., "Some Misconceptions Regarding Measurement of Creative Talents." *Journal of Creative Behavior*, 1971, 5, 77-87.

McNemar, Q., "Lost: Our Intelligence? Why?" *American Psychologist*, 1964, 18, 871-872.

Mednick, M. T. and Andrews, F., "Creative Thinking and Level of Intelligence." *Journal of Creative Behavior*, 1967, 1, 428-431.

Orpet, R. E. and Myers, C. E., "Six Structure of Intellect Hypotheses in Six-Year Old Children." *Journal of Educational Psychology*, 1966, 57, 341-346.

*Ripple, R. E. and May, F., "Caution in Comparing Creativity and IQ." *Psychological Reports*, 1962, 10, 229-230.

*Thorndike, R. L., "The Measurement of Creativity." *Teachers College Record*, 1963, 44, 422-424.

*Torrance, E. P., "Essay Review: 'Creativity and Intelligence'." *School Review*, 1963, 71, 112-115.

Van Mondfrans, A. P., Feldhusen, J. F., Treffinger, D. J., and Ferris, D. R., "Effects on Instructions and Response Time on Divergent Test Scores." *Psychology in the Schools*, 1971, 8, 65-71.

Vernon, P. E., "Creativity and Intelligence." *Educational Research*, 1964, 6, 163-169.

Wallach, M. A., "Review of the Torrance Tests of Creative Thinking." *American Educational Research Journal*, 1968, 5, 272-281.

Wallach, M. A., *Creativity*. (In: Mussen, P., (Ed.), *Carmichael's Manual of Child Psychology*, (Third Edition), New York: Wiley, 1970.

*Wallach, M. A., *The Intelligence/Creativity Distinction*. New York: General Learning Press, 1971.

*Wallach, M. A. and Kogan, N., "A New Look at the Creativity-Intelligence Distinction." *Journal of Personality*, 1965, 33, 348-369.

Wallach, M. A. and Kogan, N., *Modes of Thinking in Young Children*, New York: Holt, Rinehart and Winston, 1965.

*Wallach, M. A. and Wing, C., *The Talented Student: A Validation of the Creativity-Intelligence Distinction*. New York: Holt, Rinehart, and Winston. 1969.

Williams T. and Fleming, J., "A Methodological Study of the Relationship Between Associational Fluency and Intelligence." *Developmental Psychology*, 1969, 1, 155-162.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended maximum point values for each project are given in parentheses.

A. General Projects

1. After completing the Level A and B readings, you may wish to select any of the projects or activities from the Basic Project List, page 16.
2. Select any two approaches to the measurement of creativity (from the sub-groups in the Level C references), and prepare a critical comparison of the instruments. Include in your comparison format and use of the instrument, scoring and interpretation, supporting evidence for validity and reliability. (3 points)
3. Select any approach to the measurement of creativity (from the Level C references) and review the instrument carefully. Report on the extent to which you can determine how the instrument was developed, in relation to fundamental theories or assumptions about creativity. (3 points)
4. One purpose of testing in schools is to determine whether or not students have attained important goals and specified objectives. There should be some correspondence, therefore, between the content of the tests and the nature of school activities and experiences. Select any instrument for measuring creativity (from the Level C references), analyze it carefully, and compare its content with the activities and experiences that occur in school. Report on your findings. (3 points)

B. Advanced Projects

1. Arrange to take one or more tests yourself, selected from the Level C readings. Report on your experiences and reactions during the testing period, and your reaction to your own responses. Include in your report an evaluation of the appropriateness of the test for persons of varied ages, background, and experience. (Note: Remember that such tests should be scored and reviewed by a trained examiner, and that most tests in this Topic are intended for research use among groups, not for clinical analysis of individual scores.) (4 points)
2. Nominate the two or three ***most*** creative students and the two or three ***least*** creative students in your class (or ask a classroom teacher to do this). Determine the bases for the choices as explicity as possible. Then administer one or more tests or non-test assessments, and compare the results for the students identified as ***most*** and ***least*** creative. If there are differences, how do you account for them? If not, why not? (What factors may limit the validity or usefulness of teacher nominations?) (5 points)
3. Select any of the creativity tests described in the Level C references. Study carefully the content of the test and the explanation of its development and rationale in the accompanying test manual.

Prepare a ***checklist*** or ***rating scale*** which seeks to assess the same factors as the test (using a ***non-test*** procedure). (5 points)

C. Major Projects

Note: ***Do not attempt*** to use tests you are not qualified to administer and score!!

1. Administer two tests (or one test and one non-test instrument) to a group of subjects. Learn how to score the tests, score them, and compare the results. Prepare a report on your results and your interpretation of your findings. (7 points)
2. Conduct a ***case study*** of a person who has demonstrated creative talent in some way (which you should define and document). If possible, administer one or more of the instruments from the Level C references and report on the results. (6 points)
3. On the basis of a selected theory of creativity (see Topic 12), develop an original assessment procedure which would be useful in identification of creative ability. Describe carefully the nature and use of the instrument and its suitability for various age groups. Document carefully its relationship to the selected theory. If possible, try out the instrument with several subjects and obtain their reactions. (6 points for development plus 2 points for tryout)

Final Self-Test

1. Complete the following table for any ***three*** tests of creative ability; you may include not more than ***one*** non-test assessment instrument.

		Test One	Test Two	Test Three
a)	Name of test			
b)	Name of test author			
c)	For what age(s)?			
d)	Date published?			
e)	Cite two studies supporting validity			
f)	Name of critic?			
g)	Identify two specific criticisms			

2. List at least ***three*** general problems relating to the measurement of creativity in each of the following areas:

a) Validity	b) Reliability	c) Usability
1.	1.	1.
2.	2.	2.
3.	3.	3.

3. Explain briefly the relationship between creativity and intelligence, as proposed by any ***two*** of the following:
   a) Guilford
   b) Wallach
   c) Getzels and Jackson
   d) Ripple and May

Relation of Final Self-Quiz to Objectives and Readings		
Question	Objective	References
1	1 (+ 3 optional)	Level A; selections from Level C
2	2	Level B (2, 3, 4)
3	4, 5	Level B (5-6), sub-group 9 of Level C

TOPIC GUIDE XIV:

CHARACTERISTICS OF CREATIVE INDIVIDUALS

Topic Organizer

"If a man does not keep pace
with his companions, perhaps it is because
he hears a different drummer.
Let him step to the music which he hears,
however measured or far away."

Henry David Thoreau

How do highly creative individuals differ from their less creative peers? Are there certain personal traits or characteristics, or certain patterns of behavior, that are associated with creative talent? To what extent are stereotyped conceptions of the "creative genius" inaccurate? How can personal characteristics and behavior patterns associated with creative ability be recognized, and what value is there for the educator in such efforts?

Minimum Content Objectives

1. Describe the personality characteristics that are commonly associated with high creative potential.
2. Identify commonly-held stereotypes of highly creative individuals and explain their accuracy or inaccuracy.
3. Summarize findings of research with children and adults in which the personality correlates of creative behavior have been investigated, and give examples of characteristics which have been found to distinguish highly creative people from their less creative peers at several age levels.
4. Identify several implications of studies of creativity and personality for education in relation to identification, instruction, and nurture of creative abilities.

Rationale

Some people cringe and grimace at the mere mention of the phrase "highly creative person." To them, it suggests an image of a wild, bizarre, or eccentric person, unconstrained by any proprieties of social convention. This extraordinarily individualistic, ruggedly-nonconforming image of the creative person (usually also perceived as a starving artist, writer, poet, sculptor, or musician, a hermit, or a "mad scientist") only does us a great disservice, however. It presents a distorted, or extreme view of the personality of the creative person, focusing upon characteristics which may be accurate for only a minutely small proportion of the population, if at all.

If, instead, we view creative ability as an important and potentially valuable, constructive dimension of human talent (the view supported in this Topic), we should be concerned with a full range of creative talents, not merely with the characteristics and behavior of those exceptionally creative geniuses who seem to appear only once among thousands of persons. Thus, we will be interested in examining the personality characteristics and patterns of behavior associated with (or correlated with) creativity, accross a full range of creative talent. Some characteristics may be readily observed and easily recognized among individuals at several age levels; others may be more difficult to recognize at younger ages, or at lower levels of creative talent. But our concern will be to examine continuous relationships of varying magnitude or strength, rather than sharply defined, all-or-none descriptions of the person's characteristics.

In Objective 1, you will study some of the research evidence concerning the personal characteristics, background, and behavior of highly creative persons. In particular, the classic studies of creative architects, conducted by MacKinnon and his associates, will provide an overview of findings that have been supported in many other studies. As you work on Objective 2, you will be able to assess the accuracy or inaccuracy of some popular stereotypes about creative people, in relation to the actual research findings.

In Objective 3, you will extend your study of the personal characteristics associated with creativity to investigations involving children and adolescents, as well as adults. This work will enable you to investigate the development and the magnitude of the relationships of many characteristics with creative talent, as well as to identify a number of questions which remain partially or entirely unanswered.

Finally, as you work on Objective 4, you will study the implications of research on personal characteristics associated with creativity for other related issues, such as identification and instruction. How does knowledge of the personal characteristics and typical patterns of behavior that are related to creativity help us in recognizing creative talent? How can the teacher become alert to such indicators, and use that knowledge in planning and conducting instruction more effectively?

Pre-Instruction Self-Quiz

1. Name at least three commonly held stereotypes about the characteristics of highly creative people which have ***not*** been substantiated by research evidence.
2. Name at least five characteristics which distinguished highly creative architects in MacKinnon's research.
3. Identify at least three personality characteristics which have been held to be associated with creative ability among children and adolescents as well as among adults.
4. Describe at least two ways in which a classroom teacher can use information about students' personal characteristics (specially relating to creativity) to improve instruction.

Bibliography

Level A

Gallagher, J. J., *Teaching the Gifted Child*. (Second Edition). Boston: Allyn and Bacon, 1975, ch. 2. or

Torrance, E. P., *Guiding Creative Talent*. Englewood Cliffs, N. J.: Prentice-Hall, 1962, chs. 4-5. or

Smith, J. A., *Setting Conditions for Creative Teaching in the Elementary School*. Boston: Allyn and Bacon, 1967.

Level B

1. Dellas, M. and Gaier, E. L., "Identification of Creativity: The Individual." *Psychological Bulletin*. 1970, 73, 55-73. (This article also contains many useful references.) (Also In: Barbe and Renzulli, 1975)
2. Barron, F., *Creative Person and Creative Process*. New York: Holt, Rinehart and Winston, 1968, ch. 5-10. or

   MacKinnon, D. W., "The Nature and Nurture of Creative Talent." *American Psychologist*, 1965, 17, 484-495.
3. Torrance, E. P. and Myers, R. E., *Creative Learning and Teaching*. New York: Dodd, Mead and Company, 1971, ch. 1, 6.
4. Getzels, J. and Jackson, P., *Creativity and Intelligence*. New York: Wiley, 1962, ch. 1, 2. or

   Wallach, M. A. and Kogan, N., *Modes of Thinking in Young Children*. New York: Holt, Rinehart and Winston, 1965, ch. 2, 3, 8.

Level C

Anderson, H. H., "Creativity as Personality Development." (In: Anderson, H. H. (Ed.), *Creativity and Its Cultivation*. New York: Harper and Row, 1959.

Barron, F., "Complexity-Simplicity as a Personality Dimension." *Journal of Abnormal and Social Psychology*, 1953, 68, 163-172.

Barron, F., "Some Personality Correlates of Independence of Judgment." *Journal of Personality*, 1953, 21, 289-297.

Barron, F., "Originality in Relation to Personality and Intellect." *Journal pf Personality*, 1957, 25, 730-742.

Barron, F., "The Psychology of Imagination." *Scientific American*, 1958, 199, 151-166.

Barron, F., "The Needs for Order and Disorder as Motives in Creative Activity." (In: Taylor, C. W. and Barron, F., (Eds.), *Scentific Creativity*. New York: Wiley, 1963.

Barron, F., *Creativity and Personal Freedom*. Princeton, Van Nostrand, 1968.

Barron, F., *Artists in the Making*. New York: Seminar Press, 1972.

Berk, R., "The Perception of Divergency in Highly Gifted and Heterogeneous Pre-Adolescents." *Gifted Child Quarterly*, 1966, 10, 53-57.

Blatt, S. J. and Stein, M., "Some Personality, Value and Cognitive Characteristics of the Creative Person." *American Journal of Psychology*, 1957, 12, 406.

Carlson, R. K., "Emergence of Creative Personality." *Childhood Education*, 1960, 36, 402-404.

Crutchfield, R. S., "Conformity and Creative Thinking." (In: Gruber, H., Terrell, G., and Wertheimer, (Eds.), *Contemporary Approaches to Creative Thinking*. New York: Atherton, 1962.

Drevdahl, J. E. and Cattell, R. B., "Personality and Creativity in Artists and Writers." *Journal of Clinical Psychology*, 1958, 14, 107-111.

Feldhusen, J. F., Denny, T., and Condon, C. F., "Anxiety, Divergent Thinking, and Achievement." *Journal of Educational Psychology*, 1965, 56, 40-45.

Fleming, E. S. and Weintraub, S., "Attitudinal Rigidity as a Measure of Creativity in Gifted Children" *Journal of Educational Psychology*, 1962, 53, 81-85.

Ghiselin, B., *The Creative Process*. New York: Mentor, 1955.

Goertzel, V. and Goertzel, M. G., *Cradles of Eminence*. Boston: Little, Brown, 1962.

Golann, S. E., "The Creativity Motive." *Journal of Personality*, 1962, 30, 588-600.

Golann, S. E., "Psychological Study of Creativity." *Psychological Bulletin*, 1963, 60, 548-565.

Gowan, J. C., *Development of the Creative Individual*. San Diego: Robert Knapp, 1972.

Guilford, J. P., "Varieties of Creative Giftedness: Their Measurement and Development." *Gifted Child Quarterly*, 1975, 19(2), 107-121.

Halpin, W. G., Payne, D. A., and Ellett, C. D., "In Search of the Creative Personality Among Gifted Groups." *Gifted Child Quarterly*, 1974, 18, 31-33.

Helson, R., "Sex Differences in Creative Style." *Journal of Personality*, 1967, 35, 214-233.

Helson, R., "Personality Characteristics and Developmental History of Creative College Women." *Genetic Psychology Monographs*, 1967, 76, 205-256.

Khatena, J., "Creative Imagination Imagery and Analogy." *Gifted Child Quarterly*, 1975, 19(2), 149-160.

Kurtzman, K. A., "A Study of School Attitudes, Peer Acceptance, and Personalty of Creative Adolescents." *Exceptional Children*, 1967, 34, 157-162.

Lehman, H. C., *Age and Achievement*. Princeton: Princeton University Press, 1953.

Lucito, L. J., "Independence-Conformity Behavior as a Function of Intellect: Bright and Dull Children" *Exceptional Children*, 1964, 31, 5-13.

MacKinnon, D. W., "Personality and the Realization of Creative Potential." *American Psychologist*, 1965, 20, 273-281. (Also In: Barbe and Renzulli, 1975)

Maslow, A. H., "Creativity in Self-Actualizing People." (In: Anderson, H. H., (Ed.), *Creativity and Its Cultivation*. New York: Harper and Row, 1959.

Patrick, C., *What is Creative Thinking?* New York: Philosophical Library, 1955.

Reese, M. E. and Goldman, M., "Some Relationships Between Creativity and Personality." *Journal of Genetic Psychology*, 1961, 65, 145-161.

Roe, A., "Artists and Their Work." *Journal of Personality*, 1946, 15, 1-40.

Roe, A., "A Psychological Examination of Eminent Biologists." *Journal of Consulting Psychology*, 1949, 13, 225-246.

Roe, A., *The Making of a Scientist*. New York: Dodd, Mead and Company, 1952.

Schachtel, E. G., *Metamprphosis*. New York: Basic Books, 1959.

Schulman, D., "Openness of Perception as a Condition for Creativity." *Exceptional Children*, 1966, 33, 89-94.

Smith, R. M. and Neisworth, J. T., "Creative Thinking Abilities of Intellectually Superior Children in the Regular Grades." *Psychological Reports*, 1966, 18, 335-341.

Sussman, G. and Justman, J., "Characteristics of Pre-Adolescent Boys Judged Creative by Their Teachers." *Gifted Child Quarterly*, 1975, 19(3), 210-218.

Taylor, C. W., "The Identification of Creative Scientific Talent." *American Psychologist*, 1959, 14, 100-102.

Taylor, C. W., "A Tentative Description of the Creative Individual." (In: Parnes, S. J. and Harding, H. H., (Eds.), *A Source Book for Creative Thinking*. New York: Scribners, 1962, 169-184.

Taylor, C. W. and Barron, F., *Scientific Creativity: Its Recognition and Development*. New York: Wiley, 1963.

Torrance, E. P., "Problems of Highly Creative Children." *Gifted Child Quarterly*, 1961, 5, 31-34. (Also In: Barbe and Renzulli, 1975)

Torrance, E. P., "Career Patterns and Peak Creative Achievements of Creative High School Students Twelve Years Later." *Gifted Child Quarterly*, 1972, 16, 75-88.

Torrance, E. P., "Creative Young Women in Today's World." *Exceptional Children*, 1972, 38,597-603.

Torrance, E. P. and Dauw, D. C., "Aspirations and Dreams of Three Groups of Creatively Gifted High School Seniors and a Comparable Unselected Group." *Gifted Child Quarterly*, 1965, 9, 177-182.

Torrance, E. P. and Dauw, D. C., "Attitude Patterns of Creatively Gifted High School Seniors." *Gifted Child Quarterly*, 1966, 10, 48-52.

Walberg, H. J., "Varieties of Adolescent Creativity and the High School Environment." *Exceptional Children*, 1971, 38, 111-116.

Weisberg, P. S. and Springer, K., "Environmental Factors in Creative Function." *Archives of General Psychiatry*, 1961, 5, 554-564.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended point values for each project are given in parentheses.

A. General Projects

1. After you have completed the Level A and B readings, you may wish to conduct any of the general projects in the Basic Project List, page 16.
2. Read a biography of a highly creative person (in any area of discipline) and prepare a report using events and experiences from the person's life to illustrate the characteristics of creative people as described in your reading for this Topic. (3 points)
3. Prepare a collection of cartoons from magazines and newspapers which illustrate stereotyped ideas about the characteristics and behavior of highly creative people. (3 points)
4. Select a list of characteristics and behaviors which usually characterize creative individuals, and some which are opposed. (Or, use the checklist provided by Torrance, on page 99 of ***Gifted Children in the Classroom***, 1965.) Survey at least two groups of adults (parents, teachers, administrators, youth leaders, counselors, school psychologists, police officers, etc.) and obtain their response to the question: "What characteristics in this list are most valuable to our society at this time and which are the least valuable." Tabulate the results, compare the groups with each other, and compare each group with the characteristics associated with creativity. Report on your findings. (4 points)

B. Advanced Projects

1. Prepare several "descriptions" of hypothetical people. Include in some characteristics or patterns of behavior which have been described in the literature as associated with creativity. In others, include neutral or opposite characteristics and behavior. (You may also wish to vary systematically the age, sex, and racial/ethnic characteristics of the "people.") Present the case descriptions to several people, with questions about their attitudes and feelings about the cases. For example, you might ask a group of teachers which students they would expect to be discipline problems, or which they would most or least prefer to have in class. Report on your findings and relate them to the readings for this Topic. (5 points)
2. Conduct a survey of students, or your peers, in which you solicit nominations for the "most creative living people" in your city (or in our country, etc.). Do not provide any further definition, but encourage the participants to provide as many as five or six nominations in rank order. Tabulate the frequency with which names are given, and then find out as much as you can about the nominees selected. Compare what you find out about them with your knowledge of the research on characteristics of creative persons, and report on your results. (6 points)

3. Design a research study for investigatng the relationship of one or more selected personal characteristics to creative accomplishments. Select the characteristic(s) on the basis of your reading for this Topic. Define the criterion appropriately for the age level you select to study. (For elementary school students, see "Something About Myself" in group 5 of the Level C readings for Topic 13, or "Things Done on Your Own" on pages 251-253 of Torrance's ***Guiding Creative Talent***, 1962. For older students, see "What Kind of Person Are You?" in Topic 13, Level C, group 5 readings, or Wallach and Wing's 1969 book, ***The Talented Student***.) If possible, conduct the project, and prepare a report on your results. (5 points for design and 3 additional for conducting the study)

Major Projects

1. On the basis of preliminary nominations and evidence, select a student (at any grade level) who appears to show considerable creative ability. After obtaining all necessary permissions (student, parents, school), conduct an extensive case study. Include school projects and accomplishments; out-of-school accomplishments; goals and interests; school work and grades; interviews with teachers, parents, siblings, peers; tests of creative ability; biographical and self-report interviews; observations, etc. Prepare a detailed case study report emphasizing the personal characteristics and behavior of the subject in relation to your readings on this topic. (7 points plus 2 points if tests administered as well)
2. Prepare a critical review of the literature on the relationship of a selected personal characteristic to creative thinking ability or creative accomplishments. Review relevant theoretical and research contributions for at least a 15-year period, and include older work if it is repeatedly cited in the sources you locate. Investigate sex and age differences carefully. Prepare an extensive review paper which includes specific recommendations for needed research. Include critical analyses of the measurement and methodological adequacy of the studies reviewed, and recommendations for improvement. (7 points)

Final Self-Quiz

1. Respond to each of the following statements, assessing its accuracy and citing appropriate research evidence to support your position:
   (a) "Most creative people are selfish, egocentric people who have not been well socialized in school."
   (b) "Creative people would rather depend upon their own evaluations than those of other people."
   (c) "Every highly creative person I've known, has been very odd—kind of weird, you might say—and didn't seem to know how to get along with people."
   (d) "Too many creative people in our society would lead to our downfall; we'd have too many ideas and not enough action."
2. Name at least three characteristics which distinguish MacKinnon's highly creative architects from their less creative peers in each of these areas:
   (a) personality traits and psychological adjustment
   (b) family backgrounds and experiences
   (c) school experiences.
3. Describe at least three unique characteristics of the highly creative, highly intelligent child or adolescent, as described by Getzels and Jackson or Wallach and Kogan.
4. Name at least three kinds of behavior or characteristics which might indicate creative ability among children (or adolescents); and, for each one, describe at least two ways a teacher might modify instruction in relation to that characteristic.

Relation of Final Self-Quiz to Objectives and Readings		
Question	Objectives	References
1	1	Level A; Level B (1, 2)
2	2	Level B (2)
3	3	Level B (4)
4	4	Level B (3, 4)

TOPIC GUIDE XV:

SOCIAL AND CULTURAL INFLUENCES ON CREATIVITY

Topic Organizer

People are not merely individuals; indeed, our social and cultural context has an impact upon virtually every dimension of our behavior. How do pressures to conform, to "fit in" and to behave "the way we should" influence creativity? How do the home and school serve as socializing agencies, and with what effects on creativity? Can we maintain adequate social relationships without stifling creative expression? Are there differences in creative abilities and behavior among culturally different and disadvantaged groups?

Minimum Content Objectives

1. Define and give examples of conformity, counterformity, and independence in thinking, and describe the relationship between creativity and conformity.
2. Describe the effects of group pressures toward conformity in individual behavior, the implications of such pressures on creative behavior in a school setting, and ways of reducing such pressures.
3. Describe the positive and negative influences of norms, expectations, and sanctions on the expression of creative behavior, and describe ways for fostering socialization without sacrificing creativity.
4. Describe the relationship of group participation and evaluation on creative behavior.
5. Describe and compare differences in the development and expression of creative behavior among culturally different and disadvantaged groups.

Rationale

For some people, conformity and creativity are related as "opposite sides of the same coin." If you picture that coin, perhaps standing on edge and rotating slowly on its axis, you'll have the picture: the more you can see one side, the less you can see the other.

In Objectives 1 and 2 of this Topic, you will study the nature and dynamics of that relationship. In Objective 1, through your study of Richard Crutchfield's research, you will see that the picture is somewhat more complex that just "heads or tails." The creative person is thus described as ***independent***, neither rigidly conforming nor constantly plunging off in opposite directions to the mainstream. In Objective 2, however, you will study evidence that there are many group pressures (some subtle, some very direct) which can lead to conformity at the expense of creative independence.

From what sources do pressures toward conformity derive? As you study Objective 3, you will consider the positive and negative influences common in any social setting (norms, expectations, and sanctions) and their relationship to creative behavior. The general mechanisms of these pressures are discussed in Morris Stein's and E. P. Torrance's (1967) articles in the readings, and similar principals are considered in the background of Crutchfield's studies. Is it possible to achieve a balance between the pressures for socialization and opportunities for creativity? In Torrance's (1970) article (Level B reagings for this Topic), you will study some ideas about how this can be accomplished.

In Objective 4, our attention turns to some of the specific ways in which group participation and evaluation can encourage or inhibit creative behavior, through readings by Parnes, Smith, Simberg, and Torrance. If a few strategies are employed, and effort is deliberately made, these authors believe that the inhibiting factors can be overcome, and even that the group can become a force for stimulating creative efforts.

Social and cultural influences do not refer only to our culture as if alone or completely homogeneous, of course, and in Objective 5, our focus becomes broader. The differences among societies in the nature and effects of structures, norms, and sanctions is discussed by Stein and by Torrance (1962). Within our own society, there are many different cultural subgroups, and many disadvantaged groups, in which there are special problems (and opportunities) in relation to creativity (as discussed by Torrance, 1969). (You may also refer to Topic 7 on Culturally Different Gifted and Talented Students for additional resources that are relevant here.)

This unit can be valuable for educators in several ways. First of all, it will help you consider some of the general ways in which social and cultural forces, with which we must all contend, operate and relate to creativity. This may be important to you, not only in understanding better your students' behavior, but also in learning how to cope more creatively with the pressures and obstacles you face.

In addition, this unit may also be valuable if you think of competing pressures upon the school, on the one hand, to socialize students, and prepare them for adult roles in society; on the other, to be the resource out of which new ideas are born and in which constructive change ("progress") has its origins. How can you manage these goals effectively, without stressing one at the expense of the other?

Finally, this unit may be valuable at a much simpler level, as you consider the class as a miniature "culture" of its own. What norms, expectations, and sanctions operate? What pressures towards unthinking conformity and obedience? How adequately does creative independence have opportunity to be expressed or nurtured?

Pre-Instruction Self-Quiz

1. Explain briefly the general relationship between creativity and conformity, as described by Crutchfield and others.
2. Define and give an example of: conformity, counterformity, and independence.
3. Summarize briefly the findings of experimental studies of the effects of group pressure on individual behavior.
4. Define each of the following terms: norms, expectations, sanctions. Describe briefly how these are related to creativity.
5. Describe differences among various cultures or within several subgroups of the same society, in pressures which encourage or inhibit creative behavior.

BIBLIOGRAPHY

Level A

Parnes, S. J., *Creative Behavior Guidebook*. New York: Scribners, 1967, 14-21.

Smith, J. A., *Setting Conditions for Creative Teaching in the Elementary School*. Boston: Allyn and Bacon, 1967, ch. 5.

Torrance, E. P. and Myers, R. E., *Creative Learning and Teaching*. New York: Dodd, Mead, 1971, ch. 1 and 2.

Level B

1. Crutchfield, R. S., "Creativity and Conformity." In: Gruber, H. E., Terrell, G., and Wertheimer, M., (Eds.), *Contemporary Approaches to Creative Thinking*. New York: Atherton, 1962.
2. Simberg, A. L., "Obstacles to Creative Thinking." In Simberg, A. L., *Creativity At Work*. Boston: Industrial Education Institute, 1964, 41-69. (Also in: Davis, G. A. and Scott, J., (Eds.), *Training Creative Thinking*. New York: Holt, Rinehart, and Winston, 1971)
3. Stein, M. I., "Creativity and Culture Process." *Journal of Psychology*, 1953, 36, 311-322. (Also in: Parnes and Harding's *Source Book*, 1962, and in Mooney and Razik, 1967)
4. Torrance, E. P., "Cultural Discontinuities and the Development of Original Thinking." *Exceptional Children*, September 1962, 2-13.
5. Torrance, E. P., "Nurture of Creative Talents." *Theory Into Practice*, 1967, 5, 168-173, 201-202. (Also In: Davis, F. A. and Scott, J., (Eds.), *Training Creative Thinking*, New York: Holt, Rinehart, and Winston, 1971)
6. Torrance, E. P., "Creative Positives of Disadvantaged Children and Youth." *Gifted Child Quarterly*, 1969, 13, 71-81.
7. Torrance, E. P., "Achieving Socialization Without Sacrificing Creativity." *Journal of Creative Behavior*, 1970, 4, 283-189.

Level C

Allen, V. L. and Levine, J. M., "Social Support, Dissent and Conformity." *Sociometry*, 1968, 31, 136-149.

Allen, V. L., and Levine, J. M., "Creativity and Conformity." *Journal of Personality*, 1968, 36, 405-419.

Barron, F., "Some Personality Correlates of Independence of Judgment." *Journal of Personality*, 1952, 21, 287-297.

Clark, C. H., "How to Squelch Ideas." In: Davis, G. A. and Scott, J., (Eds.), *Training Creative Thinking*. New York: Holt, Rinehart, and Winston, 1971, 106-109.

Constanzo, P. R. and Shaw, M. E., "Conformity as a Function of Age Level." *Child Development*, 1966, 35, 1217-1231.

Cruse, D. B., "Socially Desirable Responses in Relation to Grade Level." *Child Development*, 1963, 34, 777-789.

Crutchfield, R. S., "Conformity and Character." *American Psychologist*, 1955, 10, 191-198.

Hamm, N. H. and Hoving, K. L., "Conformity of Children in an Ambiguous Pere Perceptual Situation." *Child Development*, 1969, 40, 773-784.

Henry, J., *Culture Against Man*. New York: Random House, 1963.

Hoving, K. L., Hamm, N. H., and Galvin, P., "Social Influence as a Function of Stimulus Ambiguity at Three Age Levels." *Developmental Psychology*, 1969, 1, 631-636.

Iscoe, I., Williams, M., and Harvey, J., "Modification of Children's Judgments by a Simulated Group Technique: A Normative Developmental Study." *Child Development*, 1963, 34, 963-978.

Iscoe, I., Williams, M., and Harvey, J., "Age, Intelligence, and Sex as Variables in the Conformity Behavior of Negro and White Children." *Child Development*, 1964, 35, 451-460.

Joesting, J., "The Influence of Sex Roles on Creativity in Women." *Gifted Child Quarterly*, 1975, 29(4), 336-339.

Khatena, J., "Parents and the Creatively Gifted." *Gifted Child Quarterly*, 1974, 18(3), 202-209.

Kiesler, C. and Kiesler, S., *Conformity*. Reading, Mass.: Addison-Wesley, 1969.

Lasswell, H. D., "The Social Setting of Creativity." In: Anderson, H. H., (Ed.), *Creativity and Its Cultivation*. New York: Harper and Row, 1959, 203-221.

Lucito, L. J., "Independence-Conformity Behavior as a Function of Intellect: Bright and Dull Children." *Exceptional Children*, 1964, 31, 5-13.

McMurry, F. D. and Hamblen, H. T., "How to Cope With a Non-Creative Climate." In: Davis, and Scott, *Training Creative Thinking*, 1971, 95-105.

Maccoby, E., Newcomb, T., and Hartley, E. L., *Readings in Social Psychology*, New York: Holt, Rinehart, and Winston, 1958. (Article by Asch, S., in ch. 5)

Mead, M., "Creativity in Cross-Cultural Perspective." In: Anderson, H. H., (Ed.), *Creativity and Its Cultivation*. New York: Harper and Row, 1959, 222-235.

Mead, M., "Where Education Fits In." In: Mooney and Razik's *Explorations in Creativity*. New York: Harper and Row, 1967, 165-172.

Milgram, S., "Behavioral Study of Obedience." *Journal of Abnormal and Social Psychology*, 1963, 67, 371-378.

Milgram, S., "Some Conditions of Obedience and Disobedience to Authority." *Human Relations*, 1965, 18, 57-76.

Moustakas, C., "Creativity and Conformity in Education." In: Mooney and Razik's, *Explorations in Creativity*, New York: Harper and Row, 1967, 173-184.

Moustakas, C., *Creativity and Conformity*. Princeton: Van Nostrand, 1967.

Nakamura, C. V., "Conformity and Problem Solving." *Journal of Abnormal and Social Psychology*, 1958, 56, 315-320.

Orcutt, L. E., "Conformity Tendencies Among Three- Four- and Five-Year-Olds in an Impersonal Situational Task." *Psychological Reports*, 1968, 23, 387-390.

Rosenhan, D., DeWilde, D., and McDougal, S., "Pressure To Conform and Logical Problem Solving." *Psychological Reports*, 1963, 13, 227-230.

Schulman, D., "Openness of Perception as a Condition for Creativity." *Exceptional Children*, 1966, 33, 89-94.

Stein, M. I. and Heinze, S., *Creativity and the Individual*. Glencoe: Free Press, 1960.

Torrance, E. P., *Education and the Creative Potential*. Minneapolis: University of Minnesota, 1963.

Torrance, E. P., *Rewarding Creative Behavior*. Englewood Cliffs: Prentice-Hall, 1965.

Torrance, E. P., "Peer Influences on Preschool Children's Willingness To Try Difficult Tasks." *Journal of Psychology*, 1969, 72, 189-194.

Torrance, E. P., *Encouraging Creativity in the Classroom*. Dubuque: William C. Brown, 1969.

Torrance, E. P., "Discontinuities in Creative Development." In: Torrance, E. P. and White, W. F., (Eds.), *Issues and Advances in Educational Psychology*. Itasca, Ill.: F. E. Peacock, 1969, 154-163.

Torrance, E. P., "Dyadic Interaction as a Faciliator of Gifted Performance." *Gifted Child Quarterly*, 1970, 14, 139-143.

Torrance, E. P., "Influence of Dyadic Interaction on Creative Functioning." *Psychological Reports*, 1970, 26, 391-394.

Torrance, E. P., "Group Size and Question Performance of Pre-Primary Children." *Journal of Psychology*, 1970, 74, 71-75.

White, W. F., *Psychological Principles Applied to Classroom Teaching*. New York: McGraw-Hill, 1969, ch. 6, 8-10.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended maximum point values for each project are given in parentheses.

A. General Projects

1. After completing the Level A and B readings, you may wish to select any of the projects or activities from the Basic Project List, page 16.
2. Prepare a review of literature on the topic of compliance to group pressure. Particularly, seek studies which investigate compliance in relation to age, sex, and/or cognitive and personality characteristics of the subjects. In your written review, emphasize implications for the educator. (5 points)
3. Make a list of as many possible ways as you can find in which an individual's behavior in school is influenced by norms, sanctions, and expectations (from peers and adults). Organize your list into general categories and, for each category, give some ideas about how creative talents might be provided for without ignoring the need for socialization. (3 points)
4. Read several accounts of educational or school experiences of individuals from different societies or cultural subgroups. Describe how the social and cultural pressures and influences are similar to and different from a middle-class American student's school experiences. Attempt to identify specific factors which relate (positively or negatively) to creativity. (4 points)
5. View the film, ***High School*** and report on its content in relation to the development and expression of creative talent. (2 points)

B. Advanced Projects

1. After reading about obstacles to creative thinking, make up a list illustrating how several obstacles may commonly occur in the classroom. Then, for each of those, develop some experiences, which could be used in a workshop or seminar for teachers, for helping students overcome the obstacles. If possible, try out your ideas and get some feedback. Report on your experiences. (5 points for development of the plans, plus 2 points for try-out)
2. After reading several studies about the creative abilities of disadvantaged students, interview several teachers of the disadvantaged. Attempt to determine whether they agree or disagree, their attitudes towards creativity for their students, and the efforts they make in their classrooms to reward and encourage creative behavior. (You may also want to observe in their classrooms, if possible.) (5 points)
3. Develop a set of guidelines and suggestions for the classroom teacher, concerning how to reward and encourage creative thinking through group activities. Include suggestions for specific group techniques that can be used by teachers to stimulate creative thinking. Relate each of your points to appropriate research evidence. (5 points)

C. **Major Projects**

1. Design and conduct an experimental study to replicate the findings of research on conformity or evaluation of creative behavior (see Torrance's ***Rewarding Creative Behavior*** in Level C readings) with a sample of particular interest to you, or to extend the previous findings in a specified way. (5 points for design plus 3 points for conducting the study)
2. Create an original product, in any medium you choose, to reflect some of the social and cultural influences on creativity. Share your product with others, and report on their feelings and reactions. (5 points for original product plus 2 points for reactions)
3. Interview individually several teachers and their students on the topic, "Why it is important for students to be well-behaved and obedient in school." Compare their responses and report on the similarities and differences and the relation to creative thinking. (6 points)

Final Self-Quiz

1. Describe at least three ways in which group participation, evaluation, or socialization processes can inhibit creative behavior.
2. Describe briefly how socialization can be accomplished without sacrificing creativity through group techniques and activities that encourage creative expression and problem solving.
3. Name the "creative positives" which Torrance describes in relation to disadvantaged children and youth.
4. Summarize briefly the major findings of research relating creativity and intelligence to conformity behavior (e.g., in situations where there is group pressure for conformity).
5. Describe at least two factors which influence cross-cultural differences in the encouragement of creativity.
6. Name at least five social and cultural obstacles to creative thinking, and describe how each can be overcome in a classroom setting.

Relation of Final Self-Quiz to Objectives and Readings

Question	Objective	Readings
1	1-4	Level A; Level A (1, 2, 3, 5, 7)
2	2-4	Level B (2, 5, 7)
3	5	Level B (6)
4	1	Level A; Level B (1, 5)
5	5	Level B (4)
6	2-4	Level B (2, 5, 7)

TOPIC GUIDE XVI:

EDUCATIONAL PROGRAMS FOR FOSTERING CREATIVITY

Topic Organizer

Is it possible to improve your students' creative thinking and problem solving through direct instructional intervention? Many studies have investigated whether creativity can be encouraged or developed, and a number of special instructional programs have been developed. What are they like? How can they best be used, and when? What evidence is there concerning their effectiveness?

Minimum Content Objectives

1. Describe several instructional programs which have been developed specifically to foster or enhance creative thinking and problem solving abilities.
2. Summarize briefly the research evidence concerning the effectiveness of each of the programs described for Objective 1.
3. Explain the nature and degree of the teacher's influence upon the effectiveness of creativity instructional materials.

Rationale

As interest in creativity has rapidly increased among educational and psychological researchers, one area of particular interest has been the facilitation of creativity. Many efforts have been made to develop and test educational or training programs to help people at all age levels improve their creative thinking and problem-solving abilities. These projects have taken two general directions. First, many methods and techniques have been proposed, for group leaders or teachers to use to facilitate creativity. These methods and techniques which are very general, can be incorporated into the on-going, regular activities of the group. Thus, the effort to facilitate creativity may be termed "indirect," since the primary outcome is not creativity itself, by the original goal or objective, albeit reached in a way that involves more creative thought. These methods and techniques will be considered in Topics 17 and 18.

In this Topic, our focus will be upon the ***direct*** efforts that have been made to foster creativity—the development and testing of instructional programs in which the specific purpose is to facilitate creative thinking and problem solving.

As you study Objective 1, you will review several programs which have been designed directly with the intention of fostering creativity. Although many of these are intended for use at the elementary school level, this is not strictly true. Some materials have been developed for use by adolescents and adults, and in many of the other programs, the ideas and activities might readily be modified for use at any age level. Among the programs you may be able to review are ***Ideabooks*** (Myers and Torrance); the ***Imagi/craft*** series (Cunnington and Torrance); the ***Creative Problem Solving*** approach (Parnes); the ***Productive Thinking Program*** (Covington, Crutchfield, Olton, and Davies); the ***Purdue Creativity Training Program*** (Feldhusen, Treffinger, and Bahlke); the ***Synetics*** courses (Gordon and others); ***Thinking Creatively*** and other programs (by Davis and his associates); the ***New Directions in Creativity*** series (Renzulli and Callahan); and Frank Williams' ***Total Creativity Program***.

As you work on Objective 2, you will investigate the available research evidence for the effectiveness of many of these programs, to answer such questions as, "What effects does the program have? For what age subjects? How stable or permanent are such effects? Does the program's influence generalize too many different kinds of creative behavior?" You will find that some programs were specifically designed to assist researchers investigate questions like these, so that many studies have been conducted. Some programs are still too recently published to have been widely used in research; others have been available longer, but, for a number of reasons, have not been the focus of research or evaluation studies.

Finally, as you study Objective 4, you will learn how the teacher has had an influence upon the effectiveness of these programs (even in cases where the teacher's role in the program was deliberately restricted to a very minimum, "caretaker" role). All things considered, it seems that it would not be possible for us to construct with complete success instructional materials that are "teacher proof." Research evidence in this area helps us recognize the great importance of the regular classroom teacher in fostering or inhibiting students' creativity, and thus also provides us with a foundation for Topics 17 and 18 (on the teacher's role and instructional planning for creativity, respectively).

Pre-Instruction Self-Quiz

1. Select any three instructional programs that have been designed specifically to facilitate creative thinking abilities (at any age level you choose), and describe each program in a brief paragraph. Include in your description program goals, format, intended age/grade levels, and procedures for using the program with students.
2. For each of the programs you selected in Question 1, summarize briefly the results of at least two studies which have been conducted to test the effectiveness of the program.
3. For any special program you select for fostering creativity, describe briefly: (a) the proposed role for the teacher in using the program; (b) teaching influences which may enhance the effectiveness of the program; and (c) teacher influences which may inhibit or limit the effectiveness of the program.

Bibliography

Level A

Davis, G. A., *Psychology of Problem Solving: Theory and Practice*. New York: Basic Books, 1973, chs. 6-12.

Torrance, E. P. and Myers, R. E., *Creative Learning and Teaching*. New York: Dodd, Mead, 1970, ch. 4.

Level B

1. Parnes, S. J., "Can Creativity Be Increased?" In: Parnes, S. J. and Harding, H. H., (Eds.), *A Source Book for Creative Thinking*, New York: Scribners, 1962, (Also in: Davis, G. A. and Scott, J. A., (Eds.), *Training Creative Thinking*, New York: Holt, Rinehart, and Winston, 1971.
2. Torrance, E. P., "Can We Teach Children to Think Creatively?" *Journal of Creative Behavior*, 1972, 6, 111-143.
3. Treffinger, D. J. and Gowan, J. C., "An Updated Representative List of Methods and Educational Programs for Stimulating Creativity." *Journal of Creative Behavior*, 1971, 5, 127-139. (Also in Barbe and Renzulli, 1975)
4. Treffinger, D. J. and Ripple, R. E., "Programmed Instruction in Creative Problem Solving." *Educational Leadership*, 1971, 28, 667-675.

Level C

Bennett, F., Blanning, J., Boissiere, M., Chang, S., and Collins, W., "Potentially Gifted and Talented High School Youth Benefit from Independent Study." *Gifted Child Quarterly*, 1971, 15, 96-108.

Cole, H. P., "Exemplary Curricula as Vehicles for Facilitating Creativity." *Journal of Research and Development in Education*, 1971, 4, 23-28.

Cole, H. P. and Parsons, D. E., "The Williams Total Creativity Program." *Journal of Creative Behavior*, 1974, 8, 187-207.

Covington, M. V., "Promoting Creative Thinking in the Classroom." *Journal of Experimental Education*, 1968, 37, 22-30.

Covington, M. V. and Crutchfield, R. S., "Facilitation of Creative Problem Solving." *Programmed Instruction*, 1965, 4, 3-5, 10.

Covington, M. V., Crutchfield, R. S., Olton, R. M., and Davies, L. B., *The Productive Thinking Program*. Columbus: Merrill, 1972.

Crutchfield, R. S., "Creative Thinking in Children: Its Teaching and Testing." In: Brim, O. H., Crutchfield, R. S., and Holtzman, W., (Eds.), *Intelligence: Perspective 1965*. New York: Harcourt, Brace and World, 1966, 33-64.

Crutchfield, R. S., "Instructing the Individual in Creativity." In: Mooney, R. and Razik, T., (Eds.), *Explorations in Creativity*. New York: Harper and Row, 1967, 196-206.

Crutchfield, R. S. and Covington, M. V., "Programmed Instruction and Creativity." *Programed Instruction*, 1965, 4, 1-2, 8-10.

Cunnington, B. F. and Torrance, E. P., *Imagi/craft*. Lexington, Mass: Ginn and Company, 1965.

Davis, G. A., "Teaching for Creativity: Some Guiding Lights." *Journal of Research and Development in Education*, 1971, 4, 29-34.

Davis, G. A., "Training Creativity in Adolescence: A Discussion of Strategy." In: Grinder, R. E., (Ed.), *Studies in Adolescence II*. New York: Macmillan, 1969, 538-545. (Also in: Davis, G. A. and Scott, J., (Eds.), *Training Creative Thinking*, New York: Holt, Rinehart, and Winston, 1971.

Davis, G. A. and Houtman, S. E., *Thinking Creatively: A Guide to Training the Imagination*. Madison, Wisc.: Research and Development Center for Cognitive Learning, 1968.

DeMille, R., *Put Your Mother on the Ceiling: Children's Imagination Games*. New York: Walker, 1967.

Drews, E. M. and Knowlton, D., "The Being and Becoming Series for College-Bound Students." *Audiovisual Instruction*, 1963, 8, 29-32.

Eberle, R. E., *Scamper: Games for Imagination Development*. Buffalo, N. Y.: DOK Publishers, 1971.

Evans, D., Ripple, R. E., and Treffinger, D. J., "Programmed Instruction and Productive Thinking: Preliminary Report of a Cross-National Comparison." In: Dunn, W. R. and Holyroyd, C., (Eds.), *Aspects of Educational Technology*. London: Methuen, 1968, 115-120.

Feldhusen, J. F., Bahlke, S. J., and Treffinger, D. J., "Teaching Creative Thinking." *Elementary School Journal*, 1969, 70, 48-53.

Feldhusen, J. and Houtz, J., "Problem Solving and the Concrete Abstract Dimension." *Gifted Child Quarterly*, 1975, 19(2), 122-129.

Feldhusen, J. F., Treffinger, D. J., and Bahlke, S. J., "Developing Creative Thinking: The Purdue Creative Program." *Journal of Creative Behavior*, 1970, 4, 85-90.

Feldhusen, J. F., Treffinger, D. J. and Thomas, S. J., *Global and Componential Evaluation of Creativity Instructional Materials*. Buffalo, N. Y.: Creative Education Foundation, 1971.

Gordon, W. J. J., *Synectics*. New York: Harper and Row, 1961.

Gordon, W. J. J., *The Metaphorical Way of Learning*. Cambridge, Mass.: Porpoise Books, 1971.

Gordon, W. J. J. and Poze, T., *Synectics: The Basic Course*. Cambridge, Mass.: Porpoise Books, 1971.

Khatena, J., *Training Preschool Disadvantaged Children to Think Creatively*. Huntington, W. Va.: Marshall University, 1969.

Mearns, H., *Creative Power: The Education of Youth in the Creative Arts*. New York: Dover, 1958.

Myers, R. E. and Torrance, E. P., *Ideabooks*. Lexington, Mass.: Ginn and Company, 1966.

Nash, W. R., "The Effects of a School for the Gifted and Averting the Fourth Grade Slump in Creativity." *Gifted Child Quarterly*, 1974, 18(3), 168-170.

Olton, R. M., "A Self-Instructional Program for Developing Productive Thinking Skills in Fifth and Sixth-Grade Children" *Journal of Creative Behavior*, 1969, 3, 16-25.

Olton, R. M. and Crutchfield, R. S., "Developing the Skills of Productive Thinking." In: Musen, P., Langer, J., and Covington, M. V., (Eds.) *New Directions in Developmental Psychology*. New York: Holt, Rinehart, and Winston, 1969.

Parnes, S. J., *Creative Behavior Guidebook*. New York: Scribners, 1967.

Parnes, S. J., *Creativity: Unlocking Human Potential*. Buffalo, N. Y.: DOK Publishers, 1972.

Parnes, S. J. and Noller, R. B., *Toward Supersanity: Channeled Freedom*. Buffalo, N. Y.: DOK Publishers, 1973.

Renzulli, J. S., *New Directions in Creativity: Mark I and II*. New York: Harper and Row, 1973.

Ripple, R. E. and Dacy, J. S., "Facilitation of Problem Solving and Verbal Creativity by Exposure to Programmed Instruction." *Psychology in the Schools*, 1967, 4, 240-245.

Rouse, S. T., "Effects of a Training Program on the Productive Thinking of Educable Mental Retardates." *American Journal of Mental Deficiency*, 1965, 69, 666-673.

Sisk, D., "Communication Skills for the Gifted." *Gifted Child Quarterly*, 1975, 19(1), 66-70.

Seferian, A. and Cole, H., *Encounters in Thinking: A Compendium of Curricula for Process Education*. Buffalo, N. Y.: Creative Education Foundation, 1960.

Shively, J. E., Feldhusen, J. F., and Treffinger, D. J., "Developing Creativity and Related Attitudes." *Journal of Experimental Education*, 1972, 41, 63-69.

Speedie, S. M., Treffinger, D. J., and Feldhusen, J. F., "Evaluation of Components of the Purdue Creative Thinking Program: A Longitudinal Study." *Psychological Reports*, 1971, 29, 395-398.

Sullivan, T., "Developing Problem Solving Ability in Slow Learning Elementary Students." *Journal of Creative Behavior*, 1969, 284-290.

Synectics, Incorporated, *Making It Strange*. (Books 1-4), New York: Harper and Row, 1968.

Taylor, C. W. and Harding, H. F., "Questioning and Creating: A Model of Curriculum Reform." *Journal of Creative Behavior*, 1967, 1, 22-23.

Taylor, C. W., Lloyd, B., and Rollins, J., "Developing Multiple Talents in Classrooms Through the Implementation of Research." *Journal of Research and Development in Education*, 1971, 4, 42-50.

Thomas, S. J. and Feldhusen, J. F., "To Spark an Interest: Think Creatively." *Gifted Child Quarterly*, 1971, 15, 36-41.

Torrance, E. P. and Gupta, R., "Audio-Tape Experiment in Creative Thinking." *Audio-visual Instruction*, 1964, 9, 685-686.

Torrance, E. P., "Review of *New Directions in Creativity Mark I, II, III*, by J. S. Renzulli." *Exceptional Children*, 1974, 40, 524-525.

Treffinger, D. J. and Ripple, R. E., "Developing Creative Problem Solving Abilities and Related Attitudes Through Programed Instruction." *Journal of Creative Behavior*, 1969, 3, 105-114.

Treffinger, D. J., Speedie, S. M., and Brunner, W. D., "Improving Children's Creative Problem Solving Ability: The Purdue Creativity Project." *Journal of Creative Behavior*, 1974, 8, 20-30.

Upton, A. and Sampson, R., *Creative Analysis*. New York: Dutton, 1964.

Wardrop, J. L., Olton, R. M., Goodwin, W. L., Covington, M. V., Klausmeier, M. J., Crutchfield, R. S., and Ronda, T., "The Development of Productive Thinking Skills in Fifth-Grade Children." *Journal of Experimental Education*, 1969, 37, 67-77.

Williams F. E., *Media for Developing Creative Thinking in Young Children*. Buffalo, N. Y.: Creative Education Foundation, 1968.

Williams F. E., *Classroom Ideas for Encouraging Thinking and Feeling*, Buffalo, N. Y.: DOK Publishers, 1970.

Williams, F. E., *A Total Creativity Program for Individualizing and Humanizing the Learning Process*. Englewood Cliffs: Educational Technology Publications, 1972.

Woods, M. S., *Wonderwork—Creative Experiences for the Young Child*. Buffalo, N. Y.: DOK Publishers, 1971.

Young, M. A., *Buttons Are To Push: Developing Your Child's Creativity*. New York: Pitman, 1970.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended maximum point values for each project are given in parentheses.

A. General Projects

1. After completing the Level A and B readings, you may wish to select any of the projects or activities from the Basic Project List, page 16.
2. Select at least two of the creativity instructional programs described in this Topic and compare them on several criteria. Your comparison might include goals and objectives; format; age level for which appropriate; appropriateness for both sexes or for various subgroups; research evidence for short- or long-term effectiveness; underlying ideas about the nature of creativity and its development. (3 to 6 points, depending on the extent of comparisons included)
3. On the basis of a selected theoretical explanation of creativity (see Topic 12), evaluate the adequacy of any program (one or more) for fostering creativity. Identify specific strengths and limitations of the program in relation to the theory selected. (It would be valuable, of course, to select a theory from which the program purports to have been developed, if that is the case, for the program you review.) (3 points)
4. Compare any instructional program for fostering creativity with another curriculum package or program for a regular school subject area (mathematics, language, science, etc.) at the same age or grade level. Report on the similarities and differences in format, contents, questions and exercises, directions for students and teachers, etc. (3 points)

B. Advanced Projects

1. Select any creativity instructional program and review carefully its content. Identify several specific methods or techniques used in the program to attempt to encourage creativity. Develop some exercises to illustrate how the same techniques could be used in other settings or content areas by the regular classroom teacher (or by individuals or groups of students). (5 points)
2. Beginning with a selected theoretical point of view about creativity (see Topic 12), make a list of specific methods, techniques, or instructional procedures which could be used to enhance creativity thus defined. From your list, develop a planned set of learning activities or exercises for fostering creativity. Include a description of the intended audience and procedures for using your program. (5 points)
3. Review in detail the research evidence concerning the effectiveness of any of the creativity instructional programs in this Topic. Develop a list of questions which should be answered about the program, its use in the classroom, and the extent and conditions of its effectiveness. For at least one of your questions, write out a brief plan for how the question might appropriately be studied. (5 points)

C. **Major Projects**

1. Select any creativity instructional program and study it carefully, responding to all of the questions or exercises yourself. Report on your involvement in the program. Report any evidence that causes you to believe that your own creative ability has grown. (7 points)
2. On the basis of your work in this Topic, develop a research project for evaluating the effectiveness of a particular program upon a specified criterion and/or under specially selected and controlled conditions. Conduct your project with at least two classes and with an appropriate control group(s). Report on your results, and your interpretation of your findings in relation to previous studies. (5 points for designing the study and 3 points for carrying it out and reporting the results)

Final Self-Quiz

1. Name at least three instructional programs which purport to foster creative thinking abilities. Describe each program briefly including author's or developer's name; date of publication; summary of format and content; summary of research supporting the program's effectiveness.
2. For each of the programs selected in Question 1 name ***three*** specific research questions that have not been satisfactorily answered at the present time.
3. For ***any one*** program, describe how the classroom teacher can influence (positively or negatively) the effectiveness of the program for the students.
4. Describe at least ***two*** ways teachers can use their knowledge of creativity instructional programs even if those programs are not available for use in their schools.

Relation of Final Self-Quiz to Objectives and Readings

Question	Objective	Readings
1	1, 2	Level A; Level B (2, 3)
2	2	Level A; Level B (2)
3	3	Level A; Level B (1, 4)
4	3	Level A; Level B (1, 2)

TOPIC GUIDE XVII:

THE TEACHER'S ROLE IN ENCOURAGING CREATIVITY

Topic Organizer

What can the teacher do to encourage creative thinking among her/his students, even if special curriculum materials are not available? How can our regular, day-to-day classroom teaching contribute to students' creative growth? What methods and techniques should the teacher know and use to help students think and learn more creatively?

Minimum Content Objectives

1. Identify several ways in which teacher behavior may ***inhibit*** creative development and expression among pupils.
2. Describe several specific techniques for improving pupils' abilities to:

   recognize and formulate problems
   generate ideas
   generating original or unusual ideas
   formulate and test hypotheses
   communicate ideas and gain acceptance for new solutions
   defer judgment.

3. Describe the importance of each of the following aspects of teacher behavior for the facilitation of pupils' creative abilities:

   reduced emphasis on conformity to behavioral norms
   respect for pupils' ideas and questions
   alertness for unusual ideas and contributions
   use of thought-provoking and open-ended questions
   emphasis on indirect, rather than direct, teacher behavior
   provision of opportunities for unevaluated practice
   opportunities for self-directed pupil inquiry
   opportunities for self-evaluation.

4. Describe several ways for integrating concerns for ***cognitive*** and ***affective*** behavior in order to facilitate creative development and expression.

Rationale

The classroom teacher is, without doubt, a person whose influence on the quality and kind of instruction is substantial. The teacher's behavior and decisions have tremendous impact upon the attitudes, feelings, and accomplishments of every student. This is as much true for creativity in the classroom as it is for reading, spelling, or arithmetic. No curriculum package, even those which are intended to be self-instructional, can escape the

treatment it receives from teachers. Good teachers can accomplish wonders with mediocre resources, and the best packages we can create can be misused and abused by disinterested or incapable teaching.

Any effort to foster creative thinking in the classroom must therefore take into account what happens every day in the classroom—what transpires between teacher and pupils in the day-to-day activities of teaching and learning.

Our first step, which you will consider as you work on Objective 1, is to look carefully at many ways in which the teacher's behavior can ***inhibit*** creativity among the pupils. Unfortunately, there is considerable evidence that many of the things that teachers have commonly been doing for many years may have such inhibiting effects, although certainly teachers do not deliberately strive to have such effects upon their pupils. We hope that, as you see some of the common problems that occur in the classroom, you will be able to be more alert in spotting them when they are present in your own teaching, and learn to avoid them more effectively. The first step in overcoming the problem is to recognize some of the subtle things that can occur to stifle or inhibit creative behavior among your students.

But effective action does not consist merely of removing the obstacles or staying "out of the way of trouble." We believe that, moreover, the classroom teacher can work actively to promote creativity in the classroom setting, as one of many worthwhile and important goals for the students. This positive concern for creativity reaches significantly beyond our "arts and crafts" conception of creativity. It builds upon the fundamental premise that children and adults can study and learn creatively, in any area of the curriculum; creativity is thus a process, a way of teaching and learning, and not just a special art project or an unusual composition. As you work on Objective 2, you will review a variety of different methods and techniques for encouraging creative thinking in ***any*** aspect of classroom instruction.

In addition to utilizing appropriate methods and techniques for fostering creativity, it is also important to consider the total climate or environment of the classroom in relation to creativity. In Objective 3, therefore, you will investigate some of the significant aspects of a classroom environment in which creativity can be expressed and nurtured. The teacher must learn to manage a classroom so that the methods and techniques of creative thinking can be employed freely and energetically, without fear or threat.

The environment or climate for creativity involves, therefore, not only strategies, techniques, and activities—but also the attitudes and the feelings of teachers and pupils. These are the affective dimensions of creative learning and teaching, and they must be effectively integrated with the cognitive (or intellectual) dimension of learning in order for creativity to be fostered. In Objective 4, then, you will study ways in which the teacher can take specific steps to encourage creativity through feelings as well as through thinking.

It is not easy to learn how to facilitate creative behavior among our students, and the concept may demand that you learn new ways of looking at yourself, and new ways of working with students. Your efforts will be all the more difficult, of course, since there is no one "right way" to develop a creative learning environment. We believe, however, that your efforts will be extremely rewarding, and that, as you grow to be more comfortable in new ways, you will be amazed only that you did not discover their merit and excitement sooner!

Pre-Instruction Self-Quiz

1. Name at least five ways in which students' creative behavior may be inhibited by the teacher.
2. Describe and give examples of at least four specific techniques or methods which can be used by teachers, in any area of instruction, to provide opportunities for creative thinking by students.
3. Describe and give examples of at least four ways in which teachers through deliberate efforts in their own classrooms, can create a learning environment or climate that will be conducive to creative learning.
4. Explain how cognitive and affective concerns can be integrated in order to provide more completely for many different expressions of creative talent by your students.

Bibliography

Level A

Gallagher, J. J., *Teaching the Gifted Child*. (Second Edition). Boston: Allyn and Bacon, 1975, ch. 9. or

Torrance, E. P. and Myers, R. E. *Creative Learning and Teaching*. New York: Dodd, Mead, 1970, ch. 2, 3, 5-11, 13. or

Smith, A. J., *Setting Conditions for Creative Teaching*. Boston: Allyn and Bacon, 1967. or

Torrance, E. P., *Encouraging Creativity in the Classroom*. Dubuque, Ia.: William C. Brown, 1970.

Level B

1. Davis, G. A. and Scott, J. A., (Eds.), *Training Creative Thinking*. New York: Holt, Rinehart, and Winston, 1971.
2. Soar, R. S., "Optimum Teacher-Pupil Interaction for Pupil Growth." *Educational Leadership*, 1968, 26, 275-280.
3. Torrance, E. P., "Developing Creativity Through School Experiences." In: Parnes, S. J. and Harding, H. H., (Eds.), *A Source Book for Creative Thinking*. New York: Scribners, 1962, 31-47.
4. Turner, R. L. and Denny, D. A., "Teacher Characteristics, Teacher Behavior, and Changes in Pupil Creativity." *Elementary School Journal*, 1969, 69, 265-270.
5. Treffinger, D. J. and Gowan, J. C., "An Updated Representative List of Methods and Educational Programs for Stimulating Creativity." *Journal of Creative Behavior*, 1971, 5, 127-139. (Also in: Barbe and Renzulli, 1975)
6. Williams F. E., "Models for Encouraging Creativity in the Classroom by Integrating Cognitive-Affective Behaviors." *Educational Technology*, 1969, 9, 7-13.

Level C

Allen, M. S., *Morphological Creativity*. Englewood Cliffs: Prentice-Hall, 1962.

Anderson, R. D., DeVito, A., Dyrli, O. E., Kellogg, M., Kochendorfer, L., and Weigand, J., *Developing Children's Thinking Through Science*. Englewood Cliffs: Prentice-Hall, 1970.

Borton, T., *Reach, Touch, and Teach*. New York: McGraw-Hill, 1970.

Brown, G. I., *Human Teaching for Human Learning*. New York: Viking, 1971.

Bruch, C. B., "Increasing Children's Creativity Through a Combination of Teacher Training Approaches." *Gifted Child Quarterly*, 1965, 9, 24-29.

Cartledge, C. J. and Krauser, E. L., "Training First-Grade Children in Creative Thinking Under Quantitative and Qualitative Motivation." *Journal of Educational Psychology*, 1963, 54, 295-299.

Clark, C. H., *Brainstorming*. New York: Doubleday, 1958.

Crabtree, C., "Effects of Structuring on the Productiveness of Children's Thinking." *Journal of Experimental Education*, 1967, 36, 1-13.

Crawford, R. P., *Direct Creativity*. Wells, Vt.: Fraser, 1964.

Cropley, A. J. and Feuring, E., "Training Creativity in Young Children." *Developmental Psychology*, 1971, 4, 105.

Davis, G. A. and Manske, M., "An Instructional Method of Increasing Originality." *Psychonomic Science*, 1966, 6, 73-74.

Davis, G. A. and Roweton, W., "Using Idea Checklists with College Students: Overcoming Resistence." *Journal of Psychology*, 1968, 70, 221-226.

DeMille, R., *Put Your Mother on the Ceiling: Children's Imagination Games*. New York: Walker, 1967.

Denny, D. A., "Identification of Teacher-Classroom Variables Facilitating Creative Growth." *American Educational Research Journal*, 1968, 5, 365-383.

Dunn, H. C., "Gifted Children Find Research Can Be Fun." *Gifted Child Quarterly*, 1968, 12, 10-13.

Eberle, R. F., "Developing Imagination Through Scamper." *Journal of Creative Behavior*, 1972, 6, 199-203. (Also in Barbe and Renzulli, 1975)

Engle, J. D., Jr., "Giftedness and Writing: Creativity in the Classroom." *Gifted Child Quarterly*, 1970, 14, 220-229.

Feldhusen, J. F. and Hobson, S. K., "Freedom and Play: Catalysts for Creativity." *Elementary School Journal*, 1972, 73, 149-155.

Givens, P. R., "Identifying and Encouraging Creative Processes." *Journal of Higher Education*, 1962, 33, 295-301.

Goodale, R. A., "Methods for Encouraging Creativity in the Classroom." *Journal of Creative Behavior*, 1970, 4, 91-102. (Also in Barbe and Renzulli, 1975)

Gregory, C. E., *The Management of Intelligence: Scientific Problem-Solving and Creativity*. New York: McGraw-Hill, 1967.

Hadden, F. A. and Lytton, H., "Teaching Approach and the Development of Divergent Thinking Abilities in Primary Schools." *British Journal of Educational Psychology*, 1968, 38, 171-180.

Haddon, F. A. and Lytton, H., "Primary Education and Divergent Thinking Abilities—Four Years On." *British Journal of Educational Psychology*, 1971, 41, 136-147.

Hallman, R. J., "Techniques of Creative Teaching." *Journal of Creative Behavior*, 1967, 1, 325-330.

Hughes, E. K., "The Enhancement of Creativity." *Journal of Creative Behavior*, 1969, 3, 73-83. (Also in Barbe and Renzulli, 1975)

Hutchinson, W. L., "Creative and Productive Thinking In the Classroom." *Journal of Creative Behavior*, 1967, 1, 419-427.

Kaltsounis, B., "Impact of Instruction on Development of Deaf Children's Originality of Thinking." *Perceptual and Motor Skills, 1969, 29, 298.*

Khatena, J., "Teaching Disadvantaged Pre-School Children To Think Creatively With Pictures." *Journal of Educational Psychology*, 1971, 62, 384-386.

Khatena, J., "Adolescents and the Meeting of Deadlines in the Production of Original Verbal Images." *Gifted Child Quarterly*, 1971, 15, 201-204.

Kranyik, R. D., *Stimulating Creative Learning in the Elementary School*. New York: Parker, 1969.

Kranyik, R. D. and Wagner, R. A., "Creativity and the Elementary School Teacher." *Elementary School Journal*, 1965, 66, 2-9.

Kuslan, L. I. and Stone, A. H., *Teaching Children Science: An Inquiry Approach*, Belmont: Wadsworth, 1968.

Lloyd, B. C., Seghini, J. B., and Stevenson, G., *Igniting Creative Potential II*. Sandy, Utah: Jordan School District, 1974.

Mager, R. F., *Developing Attitude Toward Learning*. Palo Alto: Fearon, 1968.

Massialas, B. G. and Zevin, J., *Creative Encounters in the Classroom*. New York: Wiley, 1967.

Mitchell, B. M., "The Classroom Pursuit of Creativity: One Strategy That Worked." *Journal of Research and Development in Education*, 1971, 4, 57-62.

Myers, R. E. and Torrance, E. P., "Can Teachers Encourage Creative Thinking?" *Educational Leadership*, 1961, 19, 156-159.

Nelson, J. B. and Celand, D. L., "The Role of the Teacher of Gifted and Creative Children." In: Barbe and Renzulli, 1975, 439-448.

Osborn, A. F., *Applied Imagination*. New York: Scribners, 1963.

Project IMPLODE. *Igniting Creative Potential*. Salt Lake City, Utah: Bella Vista Elementary School, 1971.

Raina, M. K., "A Study Into the Effects of Competition on Creativity." *Gifted Child Quarterly*, 1968, 12, 217-220.

Rogers, C. R., *Freedom to Learn*. Columbus: Merrill, 1969.

Rusch, R. R., Denny, D., and Ives, S., "Fostering Creativity in the Sixth Grade." *Elementary School Journal*, 1965, 65, 262-268.

Sisk, D., "Teaching the Gifted and Talented Teacher: A Training Model." *Gifted Child Quarterly*, 1975, 19(1), 81-88.

Taylor, C. W., "Clues to Creative Teaching." *The Instructor*, September, 1963-June 1964 (featured series of monthly articles).

Torrance, E. P., "Creative Teaching Makes a Difference." In: Gowan, J. C., Demos, G., and Torrance, E. P., *Creativity: Its Educational Implications*. New York: Wiley, 1967. (Also in: Barbe and Renzulli, 1975)

Torrance, E. P., "Priming Creative Thinking in the Primary Grades." *Elementary School Journal*, 1961, 62, 34-41.

Torrance, E. P., "Ten Ways of Helping Young Gifted in Creative Writing and Speech." *Gifted Child Quarterly*, 1962, 6, 121-127.

Torrance, E. P., *Rewarding Creative Behavior*. Englewood Cliffs: Prentice-Hall, 1965.

Torrance, E. P., "We Know Enough to Teach More Creatively than We Do." *Gifted Child Quarterly*, 1965, 9, 59-63.

Torrance, E. P., "Bringing Creativity Into Play." *Education*, 1965, 85, 547-550.

Torrance, E. P., "Curiosity of Gifted Children and Performance on Timed and Untimed Tests of Creativity." *Gifted Child Quarterly*, 1969, 13, 155-158.

Torrance, E. P. "Peer Influences on Preschool Children's Willingness to Try Difficult Tasks." *Journal of Psychology*, 1969, 72, 189-194.

Torrance, E. P., "Freedom To Manipulate Objects and Question-Asking Performance of Six-Year-Olds." *Young Children*, 1970, 26, 93-96.

Torrance, E. P., "Dyadic Interaction as a Facilitator of Gifted Performance." *Gifted Child Quarterly*, 1970, 14, 139-146.

Torrance, E. P., "Influence of Alternate Approaches to Pre-Primary Educational Stimulation and Question-Asking Skills." *Journal of Educational Research*, 1972, 65, 204-206.

Torrance, E. P. and Myers, R. E., "Teaching Gifted Elementary Pupils Research Concepts and Skills." *Gifted Child Quarterly*, 1962, 6, 1-5.

Ward, W. C., "Creativity and Environmental Cues in Nursery School Children." *Developmental Psychology*, 1969, 1, 543-547.

Weinstein, G. and Fantini, M. D., *Toward Humanistic Education: As Curriculum of Affect*. New York: Praeger, 1970.

Williams F. E., *Classroom Ideas for Encouraging Thinking and Feeling*. Buffalo, N. Y.: DOK Publishers, 1970.

Williams, F. E., *Media for Developing Creative Thinking in Young Children*. Buffalo, N. Y.: Creative Education Foundation, 1968.

Wodtke, K. and Wallen, N., "Teacher Classroom Control, Pupil Creativity, and Pupil Classroom Behavior." *Journal of Experimental Education*, 1965, 34, 59-65.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended maximum point values for each project are given in parentheses.

A. General Projects

1. After completing the Level A and B readings, you may wish to select any of the projects or activities from the Basic Project List, page 16.
2. Observe in a classroom (or make an audio or video tape of your own classroom) for a period of several days, and look for examples of creative behavior by pupils, or of behavior by the teacher which would inhibit pupils' creative thinking. Report on your observations. (3 points)
3. Select one or more ways in which teachers may inhibit pupil creativity, and describe several ways in which the specific problem(s) you selected could be handled that would provide greater opportunity for pupils to use or develop creative thinking. (3 points)
4. For any lesson, unit, or instructional package you already have used in your classroom, describe several ways in which you could utilize specific techniques or methods for fostering pupils' creative thinking abilities. (3 points)

B. Advanced Projects

1. In relation to your own teaching, or some other teacher whom you can observe regularly, make a list of as many things as you can identify which the teacher does regularly in the classroom which are related to pupil creativity. Include behavior which supports or encourages pupil creativity as well as behavior which may stifle or inhibit pupil creativity. On the basis of the list, the teacher's goals and interests, and your reading, make up a plan to help the teacher become a more effective facilitator of creative learning, including specific goals and techniques. Keep a record for several days of the teacher's efforts to implement the plan, and report on the results. (5 points)
2. Select any method or technique for fostering creative thinking, or any of the aspects of teacher behavior described in Objective 4, and conduct a thorough review of the experimental literature to determine the extent to which the recommendation is supported, and the nature of special or limiting conditions, if any, which may influence the recommendation. (5 points)

C. Major Projects

1. Assume that you were completely responsible for selecting and training the staff of a brand new elementary or secondary school, and that you have decided to make a special effort to create an environment in which creative teaching and learning would be emphasized. Develop a plan including: criteria for defining the nature of the environment you hope to establish; characteristics of teachers and procedures for teacher selection; and, content and methods of your program for training the teachers. Show how the elements of your plan are derived from your study of this (and other related) Topics. (6 points)

2. Develop a plan for an experiment to investigate the interrelationships and effects of one or more selected aspects of teacher behavior and one or more methods or techniques for fostering creativity. Include a review of related research, specific research questions or hypotheses, and a careful plan for measuring your criteria and answering your research questions. If possible, conduct the project and report on your results. (5 points for plan and 3 points for conducting the study)

Final Self-Quiz

1. Explain the difference between ***direct*** and ***indirect*** teacher influence in the classroom and describe the relationship between this aspect of teacher behavior and pupil creativity.
2. Describe and illustrate briefly at least ***five*** of Torrance's suggestions for developing creativity through school experiences.
3. Describe at least ***two*** aspects of the interrelationship of teacher behavior, teacher characteristics, and pupil creativity.
4. Describe and illustrate at least ***three*** recommendations for integrating cognitive and affective behavior to foster creativity in the classroom.
5. Describe at least ***four*** ways in which classroom teachers may unintentionally inhibit pupils' creative thinking in the classroom and, for each one, explain how the problem might be avoided.

Relation of Final Self-Quiz to Objectives and Readings

Question	Objective	Readings
1	3	Level A; Level B (2, 4)
2	2	Level A; Level B (3)
3	3	Level A; Level B (4)
4	4	Level B (6)
5	1	Level A; Level B (1, 3, 4)

TOPIC GUIDE XVIII:

DESIGNING INSTRUCTION FOR CREATIVE LEARNING

Topic Organizer

One of the important recent developments in educational psychology has been our recognition that the teacher has a very important contribution to make in designing or planning instruction. Can and should instructional planning include specific attention to creativity? If so, how? During what stages of the instructional design process must specific consideration be given to creativity? What are some basic ideas and principles of instructional planning, and how can they be related to creative learning?

Minimum Content Objectives

1. Describe and give examples of each of these components of a basic instructional model: (a) identification of goals and objectives; (b) assessment of entering behavior; (c) identification of instructional procedures; (d) assessment of performance.
2. For each of the four components of the basic instructional model described in Objective 1, describe several ways in which specific attention can be given to pupil creativity in designing instruction.
3. Describe a planful sequence of decisions and activities involved in planning an instructional program which provides specific opportunities for creative learning.
4. Identify several problems which can result from inadequate instructional planning.

Rationale

For some teachers, instruction involves thinking about what to teach, collecting some activities, ordering a film, preparing a few ditto practice sheets, and going into the classroom to "do what comes naturally." This approach to instructional planning results in many of the following problems, of course: failure to provide for individual differences, overlooking important topics, overemphasizing trivial issues, and stressing some abilities or processes (particularly knowledge and memory) at the expense of more complex processes (including critical thinking, creativity, and problem solving). Teaching which is characterized by carelessness and disorganization in planning is not "intuitive" or "spontaneous" in the constructive sense of the artist; more likely, such teaching is simple ineffective, boring, and of little value for the schools.

What is the alternative? Many ideas for helping the teacher become more effective as an instructional designer, have come from educational and psychological researchers in recent years. These ideas will be useful to the teacher who is planning instruction for classroom groups as well as the teacher who is developing learning centers or other individualized programs.

Instructional design involves a concern for systematic planning, and thus frequently begins with a general model of the instructional process. As you work on Objective 1, you will review such a model and consider specific ways in which it can be useful in effective planning of instruction. As you study Objective 2, you will relate each component of this model specifically to our present concern for creativity; at each stage of instructional planning, you will see that decisions can be made which will facilitate (or inhibit) creative learning.

A systematic approach to designing instruction will be reviewed as you study Objective 3. This set of practical guidelines will be useful to you as you begin to develop specific plans for an instructional program in which there is provision for creative thinking.

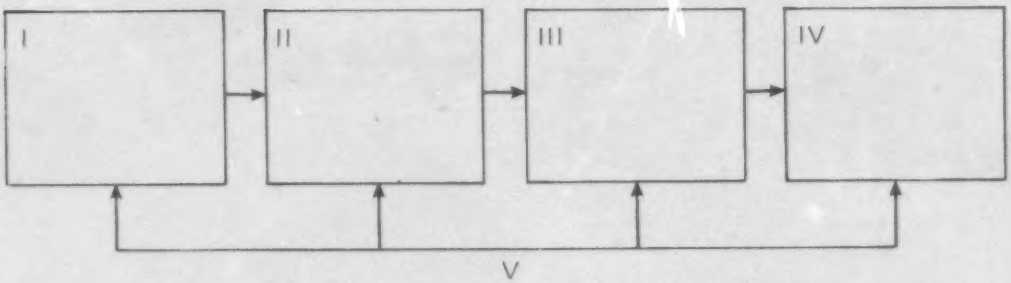
Finally, in Objective 4, you will review several specific problems which can result from inadequate instructional planning. These problems interfere with the effectiveness of instruction in a variety of ways, of course, but they also have particular importance in relation to the complex, challenging task of fostering creativity through classroom instruction.

It is not adequate for us to approach instruction by a "seat of the pants" method, nor does giving the same assignment to every child, one student at a time, constitute "individualized" learning. The greater your concern for improving your skill as an instructional designer, the easier it will become to plan effectively for your pupils in ways which incorporate systematic provision for creativity and other complex thinking and feeling processes.

Note: Topics 9 and 17 are also closely related to this Topic.

Pre-Instruction Self-Quiz

1. Complete the diagram to indicate in correct sequence the basic components of instruction:



2. For each of the numbered components in Question 1, explain how the instructional planner can specify and take into account pupils' creative thinking abilities.
3. List a logical sequence of decisions and activities involved in planning a unit of instruction.
4. Name at least three problems which can result from inadequate instructional planning, and explain the relationship of each to creativity.

Bibliography

Level A

Popham, W. J. and Baker, E. L., *Systematic Instruction*, Englewood Cliffs: Prentice-Hall, 1970, especially chs. 1-6. or

Russell, J. D., *Modular Instruction*. Minneapolis: Burgess, 1974.

Torrance, E. P. and Myers, R. E., *Creative Teaching and Learning*. New York: Dodd, Mead, 1971, especially chs. 5, 8-13.

For basic background on instructional goals and objectives:

Kryspin, W. J. and Feldhusen, J. F., *Writing Behavioral Objectives*. Minneapolis: Burgess, 1974.

Mager, R. F., *Preparing Instructional Objectives*. Palo Alto: Fearon, 1962.

Level B

1. Arena, J. E., "An Instrument for Individualizing Instruction." *Educational Leadership*, 1970, 28, 784-787.
2. Hull, R. E., "Selecting an Approach to Individualized Education." *Phi Delta Kappan*, 1973, 55, 169-173.
3. Feldhusen, J. F. and Treffinger, D. J., "Psychological Background and Rationale for Instructional Design." *Educational Technology*, 1971, 11, 21-24.
4. Feldhusen, J. F., Treffinger, D. J., and Elias, R. M., "The Right Kind of Programmed Instruction for the Gifted and Creative." *NSPI Journal*, 1969, 8, 6-11.
5. Feldhusen, J. F., Rand, D. C., and Crowe, M., "Designing Open and Individualized Instruction at the Elementary Level: A Guide for the Classroom Teacher." *Educational Technology*, (in press).
6. Ringis, R. H., "What Is an Instructional Package?" *Journal of Secondary Education*, 1971, 46, 201-105.

Level C

Anderson, R., Faust, G., Roderick, M., Cunningham, D., and Andre, T., (Eds.), *Current Research on Instruction*. Englewood Cliffs: Prentice-Hall, 1969.

Ausubel, D. P., "The Use of Advance Organizers in the Learning and Retention of Meaningful Verbal Material." *Journal of Educational Psychology*, 1960, 51, 267-272.

Ausubel, D. P. and Fitzgerald, D., "The Role of Discriminability in Meaningful Verbal Learning and Retention." *Journal of Educational Psychology*, 1961, 52, 266-274.

Baker, E. L., "The Technology of Instructional Development." In: Travers, R. M. W., (Ed.), *Second Handbook of Research on Teaching*, Chicago: Rand-McNally, 1973, ch. 8, 245-285.

Baker, R. L. and Schutz, R. E., (Eds.), *Instructional Product Development*. New York: Van Nostrand-Reinhold, 1971.

Banathy, B. H., *Instructional Systems*. Palo Alto: Fearon, 1968.

Block, J., (Ed.), *Mastery Learning: Theory and Practice*. New York: Holt, Rinehart and Winston, 1971.

Bloom, B., Hastings, J. T., and Madaus, G. F., *Handbook on Formative and Summative Evaluation of Student Learning*. New York: McGraw-Hill, 1971.

Bruner, J. S., *Toward a Theory of Instruction*, Cambridge: Harvard Press, 1966.

Carroll, J. B., "Instructional Methods and Individual Differences." In: Gagne, R. M., (Ed.), *Learning and Individual Differences*. Columbus: Merrill, 1967. (Also In: Merrill, 1971)

Clark, D. C., *Using Instructional Objectives in Teaching*. Glenview, Ill.: Scott-Foresman, 1972.

Gagne, R. M., "Learning Hierarchies." *Educational Psychologist*, 1968, 6, 1-9. (Also In: Merrill (1971), and in Ripple (1971).

Gagne, R. M., "Identifying Objectives—Task Description." In: Merrill, M. D., (Ed.), *Instructional Design: Readings*. Englewood Cliffs: Prentice-Hall, 1971, 86-89.

Gagne, R. M. and Briggs, L. J., *Principles of Instructional Design*. New York: Holt, Rinehart and Winston, 1974, ch. 5-12.

Gagne, R. M., *Essentials of Learning for Instruction*. New York: Dryden, 1974.

Gagne, R. M., *The Conditions of Learning*, (Second Edition), New York: Holt, Rinehart and Winston, 1970.

Glaser, R., *Training Research and Education*. New York: Wiley, 1962.

Glaser, R., "Instructional Technology and the Measurement of Learning Outcomes: Some Questions." *American Psychologist*, 1963, 18, 519-521.

Glaser, R., "Psychological Bases for Instructional Design." *Audio Visual Communication Review*, 1966, 14, 433-449.

Glaser, R., "The Design of Instruction." In: *Changing American School*, 65th Yearbook of the National Society for the Study of Education. Chicago:University of Chicago, 1966, 215-242. (Also in: Merrill, 1971)

Hunkins, F. P., *Questioning Strategies and Techniques*. Boston: Allyn and Bacon, 1972.

Johnson, S. R. and Johnson, R. B., *Developing Individualized Instructional Materials*. Palo Alto: Westinghouse Learning Press, 1970.

Kibler, R. Cegala, D., Barker, L., and Miles, D., *Objectives for Evaluation and Instruction*. Boston: Allyn and Bacon, 1974.

Mager, R. F., *Goal Analysis*. Palo Alto: Fearon, 1972.

Mager, R. F. and Pipe, P., *Analyzing Performance Problems*. Palo Alto: Fearon, 1970.

Markle, S. M., *Good Frames and Bad*. New York: Wiley, 1969.

Markle, S. M. and Tiemann, P. W., "Conceptual Learning and Instructional Design." *The Journal of Educational Technology*, 1970, 1, 1-12. (Also In: Merrill, 1971)

Merrill, M. D., (Ed.), *Instructional Design: Readings*. Englewood Cliffs: Prentice-Hall, 1971.

Mosston, M., *Teaching: From Command to Discovery*. Belmont: Wadsworth, 1972.

Popham, W. J. and Baker, E. L., *Establishing Instructional Goals*. Englewood Cliffs: Prentice-Hall, 1970.

Popham, W. J. and Baker, E. L., *Planning an Instructional Sequence*. Englewood Cliffs: Prentice-Hall, 1970.

Popham, W. J. and Baker, E. L., *Expanding Dimensions of Objectives*. Englewood Cliffs: Prentice-Hall, 1973.

Renzulli, J. S. and Callahan, C., "Developing Creativity Training Activities." *Gifted Child Quarterly*, 1975, 19(1), 38-45.

Sanders, N. M., *Classroom Questions: What Kinds?* New York: Harper and Row, 1966.

Treffinger, D. J., "Teaching for Self-Directed Learning: A Priority for the Gifted and Talented." *Gifted Child Quarterly*, 1975, 19(1), 46-59.

Wight, A. R., "Participative Education and the Inevitable Revolution." *Journal of Behavior*, 1970, 4, 234-282.

Williams, F. E., *Ideas for Developing Productive-Divergent Thinking in the Classroom*. Buffalo: DOK Publishers, 1970.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended maximum point values for each project are given in parentheses.

A. General Projects

1. Select a subject area and age level appropriate for your goals and interests. For a topic within that area, plan a general outline for an instructional package, following the guidelines from the readings for this Topic. Include specific provisions for fostering creative thinking. (Topic 17 may also be useful in planning your activities.) (3 points)
2. Select a lesson plan, unit, or instructional package you have prepared or obtained from another teacher, and analyze it in relation to the objectives for this Topic. Some specific points to consider include:
   (a) Are there explicit objectives?
   (b) How is the student's entering behavior considered?
   (c) Are instructional procedures consistent with objectives?
   (d) Are there alternatives for students?
   (e) What evaluation procedures are employed?
   (f) What specific provisions have been made for fostering creativity?

   (3 points)

B. Advanced Projects

1. Develop an original programmed instructional sequence on a topic of your choice. Administer the program to at least ***three*** students, and review their responses and reactions. Then, revise your program and try it with at least ***two*** additional students. (For guidelines, consult Markle's ***Good Frames and Bad***, from the Level C references.) (4 points for developing plus 3 points for try-out and revision)
2. For a subject area of your choice, request curriculum guides from one or more school districts. Compare the form and content of the guides. Analyze them according to the guidelines for instructional design you have studied in this Topic and according to their provisions for creative thinking and problem solving. (5 points)
3. Examine carefully the instructor's guide or manual for a textbook in a subject area of your choice. (Such manuals can be obtained at the Curriculum departments of most school districts, at the library or curriculum laboratory in most Colleges of Education, or directly from classroom teachers.) Review the manual to determine its adequacy and completeness as a resource for instructional design and to assess the degree to which there is specific provision for creative teaching. (5 points)

C. **Major Projects**

1. Write to a publisher of textbooks, and obtain a complete set of student books and teacher manuals for a particular curriculum area, plus other supporting material that may be available. Examine these, and analyze them in relation to the guidelines and principles in this Topic. Are there explicit objectives? Are several cognitive levels involved in the objectives and in the content? Is there specific provision for creativity? Are outcomes in the affective domain considered? What resources are provided or identified for the teacher in relation to instructional procedures and evaluation? Is there evidence that each level of the series provides more for the development of more complex or advanced learning processes and outcomes? (6 points)

Final Self-Quiz

1. Write a diagram (or list in correct sequence) the components of the basic instructional model discussed in this unit.
2. Explain each component of the instructional model in not more than three sentences.
3. Summarize briefly at least one way in which a specific concern for creativity can be incorporated into each component of the instructional model.
4. In the following list of steps in the design of an instructional sequence, the steps are given in incorrect order. Number them so that 1 represents the first step, 2, the second, etc.
    a) Determine ways to communicate objectives to students.
    b) Identify essential attributes of each concept or topic.
    c) Specify instructional objectives.
    d) Plan evaluation procedures.
    e) Identify the major ideas and concepts to be taught.
    f) Analyze the objectives in relation to cognitive and affective levels.
    g) Organize concepts and topics hierarchically.
    h) Design instructional procedures.
    i) Select appropriate examples.
5. Name and explain briefly the principal components of an individualized instructional package.

Relation of Final Self-Quiz to Objectives and Readings		
Question	Objective	Readings
1	1	Level A; Level B (3)
2	1	Level A; Level B (3)
3	2	Level A; Level B (4, 5)
4	3	Level A; Level B (3)
5	2, 3	Level A; Level B (1, 2, 6)

TOPIC GUIDE XIX:

CREATIVITY AND EDUCATIONAL INNOVATIONS

Topic Organizer

Some people find educational innovations to be a very confusing matter—there are so many new ideas, and so many of them seem very much alike. Sometimes it is difficult to remember what the differences are, if there are any. What does "creativity in education" have to do with all this? Is it just another name to add to the list? Are there some common ways or criteria through which many new ideas might be analyzed and compared? Is fostering creative thinking a problem-solving goal that can be reached through many approaches?

Minimum Content Objectives

1. Describe and contrast the essential characteristics and assumptions of discovery, inquiry, and reception learning, as reflected in the work of Bruner, Suchman, and Ausubel.
2. Describe the ways in which the goals and procedures of "discovery" and "inquiry" approaches to instruction are similar to, and different from a concern for creativity in teaching and learning.
3. Describe the essential characteristics and assumptions of "open" or "informal" education, and their relationship to the problem of fostering creativity through education.
4. Describe the essential characteristics of "process education," and describe several curricula which have been developed to emphasize "processes" rather than "products."
5. Describe the relationship of "process education" curricula to provisions for fostering creativity in school.

Rationale

There are many educational innovations which focus upon providing for more effective instruction for the individual learner, and which emphasize the ***process*** of thinking, feeling, and learning, not just the ***content*** of instruction. These innovations are described through a variety of different names: alternative education, process education, affective education, humanistic education, open education, informal education, and doubtless, several others.

As you study creativity in educational settings, you discover that many of your concerns will be very similar to those of the developers and advocates of these innovations. How can instruction provide the student with opportunities to learn the skills of effective problem solving? Can students learn to think more critically and creatively, rather than merely memorizing and repeating what they are told by the teacher? Can students learn more

about their feelings, attitudes, and values, and how these influence behavior? Can the students learn about the processes of learning and inquiry?

As you work on Objective 1, you will examine the controversial areas of "learning by discovery" and inquiry approaches to instruction. You will study the work of some advocates of discovery (Bruner) and inquiry (Suchman), as well as a thoughtful critic (Ausubel).

In Objective 2, you will work on the relationships between creativity studies and the discovery-inquiry approach. In this effort, you will be able to identify sepcific goals and procedures that are shared among these approaches as well as some common assumptions about the student's own needs and interests as factors underlying motivation to learn. In some ways, however, you will also discover that "creative learning" and discovery or inquiry approaches can involve different instructional procedures and activities.

A great deal of interest has been given to "open education" in our society in recent years, and as you work on Objective 3, you will study how "open" or "informal" education has been defined and practiced by some of its proponents, and how the procedures often recommended for "open" teaching and learning are comparable in many respects to the methods and techniques used by educators interested in creativity for many years. (In addition to this Topic, if you are especially interested in the area of open or informal education, you may also be interested in Topic 17.)

Although schools have traditionally emphasized very heavily memory processes, stressing the students' ability to recognize or recall information that had been "taught" by the teacher, we now recognize that there are many other important thinking processes which can and should also be developed through education. In recognition of this, there has been a growing interest in the area of "process education." Process educators are commited to helping students learn more effectively how to use their imagination, judgment, problem-solving, and decision-making abilities; they are less concerned with the specific content demands (the "facts" and information) that have traditionally been the classroom teacher's primary concerns. In Objectives 4 and 5, the "process education" approach will be reviewed and related to creative teaching and learning.

This Topic should assist you in comparing some of the basic goals and procedures of several popular innovative approaches to instruction, and to relate each of these areas to our concern for creativity. As a result, you may be able to select, adapt, and use in your classroom a number of new methods and techniques, derived from a variety of approaches.

Pre-Instruction Self-Quiz

1. Describe the essential characteristics of a discovery approach to instruction, as described by Bruner, and an inquiry approach, as described by Suchman. Identify the similarities and differences.
2. Describe at least five criticisms of discovery approaches to instruction, as identified by Ausubel.
3. Summarize briefly several ways in which discovery or inquiry approaches can be useful in fostering creative thinking.
4. Describe several basic assumptions underlying open education, and show how these are similar to assumptions made by teachers who are attempting to encourage creative thinking.
5. Define "process education" and describe ways in which its advocates emphasize goals and procedures which will help foster creative thinking.

Bibliography

Level A

Cole, H. P., *Process Education*. Englewood Cliffs: Educational Technology Publications, 1972. (Especially chs. 1, 2, 4). or

Gallagher, J. J., *Teaching the Gifted Child*, (Second Edition). Boston: Allyn and Bacon, 1975, ch. 8. or

Nyquist, E. B. and Hawes, G. R., (Eds.), *Open Education: A Sourcebook for Parents and Teachers*. New York: Bantam, 1972. or

Seferian, A. and Cole, H. P., *Encounters in Thinking: A Compedium of Curricula for Process Education*. Buffalo, N. Y.: Creative Education Foundation, Occasional Paper Number 6, 1970.

Level B

1. Ausubel, D. P., "Learning by Discovery: Rational and Mystique." *NASSP Bulletin*, 1961, 45, 18-58. (Also In: Ausubel, D. P., *Educational Psychology: A Cognitive View*. New York: Holt, Rinehart, and Winston, 1968, ch. 4)
2. Bruner, J. S., "The Act of Discovery." *Harvard Educational Review*, 1961, 31, 21-32.
3. Cole, H. P., "Process Curricula and Creativity Development." *Journal of Creative Behavior*, 1969, 3, 243-259.
4. Dillion, S., "Open Education . . . Revisited." *Menninger Prespective*, 1973, 4, 14-21.
5. Kohl, H., *The Open Classroom: A Practical Guide to a New Way of Teaching*. New York: Vintage, 1970.
6. Suchman, J. R., "Inquiry Training in the Elementary School." *Science Teacher*, 1960, 27, 42-47.

Level C

Allen, D. W. and Seifman, E., (Eds.), *The Teacher's Handbook*. Glenview, Ill.: Scott Foresman, 1971.

Aschner, M. J. and Bish, C. E., *Productive Thinking in Education*. Wasnington: NEA, 1965.

Ashton-Warner, S., *Teacher*. New York: Simon and Schuster, 1963.

Atkin, J. M. and Karplus, R., "Discovery or Invention?" *Science Teacher*, 1962, 29, 45-51.

Ausubel, D. P., *Educational Psychology: A Cognitive View*. New York: Holt, Rinehart, and Winston, 1968, ch. 14.

Ausubel, D. P. and Robinson, F., *School Learning*. New York: Holt, Rinehart and Winston, 1969.

Barth, R. S., *Open Education and the American School*. New York: Agathon Press, 1972.

Biber, B. and Minuchin, P., "The Changing School." In: Silberman, M. L., Allender, J. S., and Yanoff, J. M., *The Psychology of Open Teaching and Learning*. Boston: Little, Brown and Company, 1971, 239-250.

Bishop, L. K., *Individualizing Educational Systems*. New York: Harper and Row, 1971.

Blackie, J., *Inside the Primary School*. New York: Schocken, 1971.

Blitz, B., *The Open Classroom: Making it Work*. Boston: Allyn and Bacon, 1973.

Bruner, J. S., *The Process of Education*. Cambridge: Harvard University Press, 1960.

Bruner, J. S., *On Knowing: Essays For the Left Hand*. Cambridge: Harvard University Press, 1962.

Bruner, J. S., *Toward a Theory of Instruction*. New York: W. W. Norton, 1968.

Bruner, J. S., "The Skill of Relevance or the Relevance of Skills." *Saturday Review*, 1970, 50, Number 14, 66-68, 78-79.

Bruner, J. S., *The Relevance of Education*. New York: W. W. Norton, 1971.

Combs, A. W., (Ed.), *Perceiving, Behaving, Becoming*. Washington, D. C.: Association for Supervision and Curriculum Development, 1962.

Craig, R. C., " Directed Versus Independent Discovery of Established Relations." *Journal of Educational Psychology*, 1956, 47, 223-234.

Cremlin, L. A., *The Transformation of the School*. New York: Teachers College Press, 1967.

Dennison, G., *The Lives of Children*. New York: Random House, 1969.

Featherstone, J., *Schools Where Children Learn*. New York: Liveright, 1971.

Gross, R. and Gross, B., (Eds.), *Radical School Reform*. New York: Simon and Schuster, 1969.

Groth, N. J., "Success and Creativity in Male and Female Professors." *Gifted Child Quarterly*, 1975, 19(4), 328-335.

Guthrie, J. W. and Wyn[illegible], *New Models for American Education*. Englewood Cliffs: Prentice-Hall, 1971.

Hertzberg, A. and Stone, E. F., *Schools Are For Children*. New York: Schocken, 1971.

Holt, J., *What Do I Do Monday?* New York: Dutton, 1970.

Holt, J., *The Underachieving School*. New York: Pitman, 1969.

Kersh, B. Y. and Wittrock, M. C., "Learning by Discovery: An Interpretation of Recent Research." *Journal of Teacher Education*, 1960, 53, 571-575.

Kersh, B. Y., "The Motivating Effect of Learning by Directed Discovery." *Journal of Educational Psychology*, 1962, 53, 65-71.

Kersh, B. Y., "Learning by Discovery: What Is Learned?" *The Arithmetic Teacher*, 1964, 11, 226-232.

Kozol, J., *Free Schools*. Boston: Houghton-Mifflin, 1972.

Miller, G. A., Galanter, E., and Pribram, K., *Plans and the Structure of Behavior*. New York: Holt, Rinehart, and Winston, 1960.

Murrow, L. and Murrow, C., *Children Come First*. New York: American Heritage Press, 1971.

Parker, C. and Rubin, L., *Process as Content: Curriculum Design and the Application of Knowledge*. Chicago: Rand-McNally, 1966.

Rathbone, C. H., (Ed.), *Open Education*. New York: Citation, 1971.

Rogers, C. R., "The Facilitation of Significant Learning." In: Siegel, L., (Ed.), *Instruction Some Contemporary Viewpoints*. San Francisco: Chandler, 1967.

Rogers, C. R., *Freedom to Learn*. Columbus: Merrill, 1969.

Ryan, F. L. and Ellis, A. K., *Instructional Implications of Inquiry*. Englewood Cliffs: Prentice-Hall, 1974.

Schaefer, C. E., "The Importance of Measuring Metaphorical Thinking in Children." *Gifted Child Quarterly*, 1975, 19(2), 140-148.

Schulman, L. S. and Keislar, E. R., *Learning by Discovery*. Chicago: Rand-McNally, 1966.

Silberman, C. E., *Crisis in the Classroom*. New York: Random House, 1970.

Silberman, C. S. (Ed.), *The Open Classroom Reader*. New York: Vintage, 1973.

Suchman, J. R., *The Elementary School Training Program in Scientific Inquiry*. Champagne: University of Illinois, 1962.

Suchman, J. R., "A Model for the Analysis of Inquiry." In: Klausmeier, H. J. and Harris, C. W., (Eds.), *Analysis of Concept Learning*. New York: Academic Press, 1966. (Also in Barbe and Renzulli, 1975)

Taba, H., "Learning by Discovery: Psychological and Educational Rationale." *Elementary School Journal*, 1963, 63, 308-316. (Also in Barbe and Renzulli, 1975)

Taba, H. and Elzey, F., "Teaching Strategies and Thought Processes." *Teachers College Record*, 1964, 65, 523-534.

Toffler, A. *Future Shock*. New York: Random House, 1970.

Torrance, E. P., "Retooling Education for Creative Talent: How Goes It?" *Gifted Child Quarterly*, 1974, 18(4), 233-238.

Turner, J., *Making New Schools*. New York: McKay. 1971.

Weber, L., *The English Infant School and Informal Education*. Englewood Cliffs: Prentice-Hall, 1971.

Wittrock, M. C., "Verbal Stimuli in Concept Formation: Learning by Discovery." *Journal of Educational Psychology*, 1963, 54, 183-190.

Recommended Projects and Activities

Note: For courses employing the point system for evaluation, recommended maximum point values for each project are given in parentheses.

A. General Projects

1. After completing the Level A and B readings, you may wish to select any of the projects or activities from the Basic Project List, page 16.
2. Make up a chart comparing the basic assumptions, goals, instructional procedures, and evaluation procedures of discovery approaches, inquiry training, open education, and process education. Include specific consideration of methods and techniques which are also useful in fostering creativity in the classroom. (3 points)
3. Select any of the approaches reviewed in this Topic, and develop a lesson plan or unit on a subject of your choice which employs that approach. Include specific consideration of goals, activities, and evaluation procedures which are concerned with the facilitation of creative thinking abilities. (3 points)
4. View the film, ***The Day the Insects Took Over***, (Holt, Rinehart, and Winston Critical Moments in Teaching series) and prepare a lesson or unit, showing how the instructor in the film could have used one or more of the approaches in this Topic to improve instruction. (3 points)

B. Advanced Projects

1. Obtain samples of curriculum materials which have been developed for any of the approaches in this Topic and review them specifically in relation to their effectiveness in developing creative thinking. (5 points)
2. Select a subject area of your choice and prepare a lesson or unit based upon one of the innovative approaches reviewed in this Topic, and then re-do it using another approach. Report on the similarities and differences in your products. (5 points)
3. Conduct a comprehensive review of research on the nature or effectiveness of any of these approaches, including specific consideration of creativity. (5 points)

C. Major Projects

1. Survey teachers to determine their knowledge of (and attitudes toward) various innovative approaches to instruction. Include investigation of their knowledge of specific similarities and differences among approaches. (6 points)
2. On the basis of your review of one or more of these innovative approaches, design an experimental study to investigate their effects upon student creative thinking under specified conditions. Conduct the study, if possible, and report on the results. (5 points for designing a study and 3 points for conducting it)

Final Self-Quiz

1. Define the four assumptions underlying learning by discovery as hypothesized by Bruner, and tell how they are related to efforts to foster creativity in school.
2. For each assumption in Question 1, describe Ausubel's critical reaction.
3. Define, give an example, and show how each of the following approaches is related to creativity in teaching and learning:
   (a) inquiry training
   (b) open education
   (c) informal schooling
   (d) process education curricula.

Relation of Final Self-Quiz to Objectives and Readings		
Question	Objective	Readings
1	1, 2	Level A; Level B (2)
2	1	Level A; Level B (1)
3	3-5	Level A; Level B (3-5)

UNIT I

Answer Key

TOPIC I

1. a) Galton's *Hereditary Genius* appeared in 1869.
   The first programs for the gifted and talented were begun.
   b) An emphasis on acceleration and enrichment in the public schools. Terman began his interest in gifted individuals and designed a longitudinal study of them.
   c) The Russians launched the rocket Sputnik, thereby spurring interest in the education of the gifted and talented.
   The National Defense Education Act (NDEA) was legislated in Congress providing funds for educational programs in science and mathematics.
   d) Nothing particular was going on during this period.
   e) The Marland Report on the gifted and talented was presented to Congress after an intensive national status study.
   The Office for the Gifted and Talented was established in Washington as a result of the Marland Report.
   The National/State Leadership Training Institute on the Gifted/Talented was established to provide impetus for the development of leadership personnel.
   National legislation provided funds for competitive grants to LEA's, SEA's, institutes of higher education, and non-educational agencies for a variety of projects.

2. Your response should include references to: the need to provide for advanced intellectual processes; providing a challenge to develop student's interests; need to take into account; differing student content needs; need to take into account actual students' unique personal, motivational, and learning characteristics.

3. 1) Overemphasizing the gifted and talented through special programs creates an elitist population. When the gifted and talented are provided time to interact with their chronological peers, the probability of them becoming an elitist group is reduced.
   2) Individualizing regular classroom instruction abolishes the need for special programs for the gifted and talented. Individualized instructional planning cannot supplant the special programs which allow the student to explore learnings beyond the confines of any individualized classroom arrangement.
   3) Programs for the gifted and talented reinforce the segregation of students. The grouping of gifted students with their intellectual peers is not only desirable, but necessary for stimulation and meaningful interaction. Instructional content must be sufficiently differentiated from the general curriculum to be relevant to the unique needs of the gifted and talented.
   4) What is good for the gifted is good for all children. A program tailored to the needs of the gifted can only cause frustration and failure to learners of lesser ability. Some instructional techniques successful with gifted students can be adapted for use with other student populations, but content appropriate for the gifted will not be appropriate for the majority of the student population.

4. 1) The necessity of a program for the gifted and talented. Are the unique needs of the gifted not being met in the mainstream of education? Do the gifted require specially trained personnel to facilitate their learning?
   2) The special provisions of the program. What services will be provided that are not presently available? Will personnel and resources be of significant quality to warrant additional time and expense?
   3) When and where will provisions for a program be made available? Will time be set aside during the school day for the program or will time outside the school day be necessary? Is there available space in the school complex for the program or will it be necessary to locate space in the community?
   4) How will provisions be put into operation? Have funds been allocated to provide necessary materials and personnel to make it a quality program? Is there a commitment from the school district to maintain and support the program?
   5) Who will be responsible for implementing these provisions? Are there special qualities that personnel working with the gifted must possess? What criteria will be used to select appropriate personnel?

5. a) Creative talent, if not encouraged in school, may be stifled and lost to the individual in later years.
   b) There is a great need for original, creative solutions for a wide range of problems in our world.
   c) Individuals must learn how to think creatively and solve problems in order to function effectively in a world of rapid change.
   d) Creativity contributes to many valuable kinds of achievement (within school and beyond) and to mental health or personal adjustment.

TOPIC II

1. a) Galton – "father of tests and measurements." Felt that sample bits of behavior were indicative of general ability.
   b) Binet – sought to measure "higher thought processes."
   c) Terman – designed tests to measure a general factor (ability to deal with abstractions).
   d) Stern – formulated concept of IQ.
   e) Thurstone – specialized in the statistical technique of factor analysis; primary mental abilities.
   f) Spearman – proposed the 'g' and 's' factors.
   g) Burt – British psychologist who explored the genetic point of view. Proposed that approximately 75 per cent of ability was genetic constitution, 25 per cent environment.
   h) Vernon – proposed hierarchical model of intelligence.
   i) Cattell – referred to "fluid" and "crystallized" intelligence.
   j) Wechsler – designed tests to measure aggregate of abilities.
   k) Guilford – proposed a multifactor theory that intelligence can be divided into approximately 120 components.

2. Thurstone's Primary Mental Abilities included: number facility, word fluency, visualizing, memory, perceptual speed, induction, and verbal reasoning.

3. Fluid intelligence is that aspect of intelligence (according to Cattell and Horn) that is relatively independent of experience or education; crystallized intelligence is much more open to environmental influences.

4. A general factor.

5.

Operations	Contents	Products
evaluation	figural	units
convergent production	symbolic	classes
divergent production	semantic	relations
memory	behavioral	systems
cognition		transformations
		implications

6. 3;4;2;1

7. a) Are test scores valid? Do they represent important indexes of the person's potential for learning? Do they predict future success outside school? Do they assess comprehensively the many components of human ability?
   b) Are tests merely used to classify or categorize ("label") students? Do teachers adequately understand the meaning and limitations of test scores? Do scores tend to lead to rigid, self-fulfilling expectations about students?
   c) Are tests biased (in content or in use) against disadvantaged and minority students?
   d) Can intellectual abilities be enhanced? Does education or experience help a person behave more intelligently?

TOPIC III

1. Piaget:
   1. maturation
   2. encounters with experience
   3. social transmission
   4. equilibration (accommodation and assimilation)

   Bruner:
   1. increasing independence of response from immediate nature of the stimulus
   2. internalizing events into a "storage system" that corresponds to the environment
   3. an increasing capacity to communicate by words and symbols
   4. a systematic and contingent interaction between a tutor and a learner
   5. language facilitates learning to bring order into the environment
   6. capacity to deal with several alternatives simultaneously

2. a) Visual or other sensory organization with the child using highly concrete visual imagery
   b) Comprehension of abstract concepts
   c) Objects and events defined in terms of action taken toward them
   d) Classification of things by a single feature; intuitive classification
   e) Ability to "think" out problems previously "worked" out

3. Both men proposed a stage theory: the stages are not fixed, but a person goes through them in the same order; individuals move toward increasing abstraction.

4. Piaget: It is probably possible to accelerate, but maximal acceleration is not desirable. There seems to be optimal time. Piaget is somewhat skeptical of the value or comprehensiveness of efforts at accelerating cognitive growth.

   Bruner: Bruner believes that it is possible to accelerate development, and that, because the more complex levels of intellectual functioning make the person's thought more efficient and more "powerful" it is valuable and desirable to encourage such efforts.

5. This question draws from the Level B references (particularly those by Bayley, Horn, Bradway, and Thompson). Recent evidence indicates that many aspects of intelligence actually continue to improve into adulthood, and a number of aspects of intelligence remain quite stable into adulthood. Decline in some abilities (particularly those aspects involving memory for specific information) occurs earlier than others.

UNIT II

Answer Key

TOPIC IV

1. Research seems to suggest that gifted and talented individuals generally excel in:

   Health – the gifted seem to have fewer physical and mental problems and maintain a healthy status through old age.
   Social Adjustment – the gifted tend to have healthier self-concepts and attitudes in social relationships.
   Scholarship – the gifted have finely developed mental processes producing academic excellence.
   Achievement – the gifted are capable of outstanding success and achievement in a number of fields of endeavor.

2. Childhood personal characteristics:

   1. slightly better physical condition
   2. better emotional stability; better social attitudes; don't tend to overstate knowledge
   3. all personal traits above the average
   4. superior traits of personality

   Elementary school experiences:

   1. superiority in reading, language usage, arithmetical reasoning; better than average in science, literature and the arts
   2. learn to read easily, use more books, have many hobbies

   Adolescence and early adulthood:

   1. improved status on mental ability tests
   2. outstanding accomplishments
   3. tend to stay advanced in ability and accomplishments

3. Learning ability

   unusually advanced vocabulary; reads a variety of materials
   rapid insight into cause-effect relationships
   keen and alert observer; advanced reasoning ability
   has large storehouse of information
   quick mastery and recall of factual information
   ready grasp of underlying principles; looks for differences and similarities

   Motivation

   absorbed in certain topics or problems; persistent in task completing
   bored with routine tasks
   needs little motivation in work that is exciting
   strives for perfection; is self-critical
   prefers to work independently; requires little direction from teachers
   likes to organize and bring structure to things, people, and situations

   Creativity

   displays a great deal of curiosity about many things
   often offers unusual, unique, clever responses
   is a high risk taker; is adventurous and speculative
   displays a good deal of intellectual playfulness; fantasizes; imagines
   shows emotional sensitivity
   is nonconforming, individualistic

   Leadership

   is self-confident with students his own age as well as adults
   adapts readily to new situations
   can express oneself well; has good verbal facility, usually well understood
   seems to enjoy being around other people
   carries responsibility well
   seems to be well-liked by classmates

4. Academic

   The academically talented are learners who adjust, as needed, to get high grades in school activities that call for receiving, storing, retrieving, and dumping information.

   Creative

   The creatively talented are not only thinkers, but producers of original ideas, products, and methods; they often solve problems uniquely but appropriately.

   Planning

   Students who are talented in planning have the ability to organize their time, their work, their play, and other people.

   Communicating

   Students talented in communicating have the ability to express themselves fluently and effectively and are also able to understand others in their various methods of communication.

   Forecasting

   Persons talented in forecasting have the ability to predict outcomes of problems or situations and can foresee difficulties or conditions that will require future adjustments and new solutions.

   Decision making

   Those talented in decision making will have the ability to view many alternatives, to gather relevant information from many sources, to come to a logical decision, and to explain and justify it.

TOPIC V

1. a) Irrelevance of existing curriculum; low self-concept
   b) Problems in the home; problems or conflicts with peer group
   c) Advanced academic levels; diversity of interests; conflict of interests
   d) Low aspiration levels; sterile academic environment

2. a) Design individualized learning program; establish special programs
   b) Group and individual counseling; encounter sessions
   c) Guidance and counseling sessions
   d) Changes in educational environment and programming; designing of individualized educational goals and objectives

3. 1) Failure to identify with parents and their values and attitudes
   2) Negative self-concepts; personal values appear to be antisocial
   3) Low aspiration levels

4. Identification:

   a) if test data in student's folder appear much higher than typical production and quality suggests, the teacher may consider an underachievement problem likely;
   b) personal data from counselor or school psychologist may suggest that student's potential is greater than evidenced by typical school performance

   Strategies for assisting:

   a) development of individualized approach to needed basic skills through contracts or learning agreements;
   b) development of research or independent study projects on real problems of special interest to the student.

5. 1) Low self-concepts by gifted individuals often prevent them from attempting difficult assignments or projects because they know they can't succeed.
   2) Over-conscientious or selfish parents constantly push the student to achieve more and excel to a little higher level.
   3) Gaps and weaknesses in learning areas may produce genuine concern on the part of teachers who in turn may seek the counsel of psychologists in taking steps to remedy the problem.

TOPIC VI

1. An acceptable response to this question should include the essential factor of providing an appropriate education to each individual. When an individual possesses some basic knowledge of characteristics and expected behaviors, then they will have a clearer understanding of the curricular components to be constructed in an appropriate learning program.

2. a) Many principals report that they have *no* gifted children in their schools.
   b) Some people believe that gifted students do not need special identification or educational efforts in order to do well in school.
   c) Some people cite distrust of fairness of intelligence tests as a reason for failure to undertake identification procedures.
   d) Concern that identification of the gifted is undemocratic or "elitist."
   e) Some people have rejected identification efforts because they believe adequate tests are not available for comprehensive assessment of complex human abilities.

3. a) Changes in our understanding of the structure of abilities have caused us to rely less on a single score, more on many different intellectual factors.
   b) Greater emphasis on creative talent has caused us to examine new kinds of student thinking, learning, and accomplishment, both in and out of school.
   c) Recognition of the limitations of traditional tests have stimulated the utilization of more comprehensive, case study approaches utilizing data from many sources.

4. Screening procedures include systematic approaches on gross measures producing a group of individuals suspected of possessing pre-determined qualities.

   Identification procedures are finely delineated criterion measures designed to identify from a larger group a select group.

5.

	ASSET	LIMITATION
Teacher nomination	involves teachers in selection process	may miss underachievers or students with apathetic attitudes toward school program
Group IQ tests	easily administered	may miss those with reading difficulties and emotional or motivational problems
Standardized achievement tests	easily administered; indicative	will not identify underachievers
Autobiographies	gives personal information	considered by some as invasion of privacy
Expert judgments	involves non-educator in assessment procedures	identifying competent persons; remuneration for services usually not available

6. Gross screening

This step should focus on the utilization of standardized or informal instruments, or subjective data from any source in or out of school that would bring the attention of school officials the possibilities of gifted students.

Comprehensive evaluation

In this step, procedures are initiated to gather all pieces of information that shed light on the problem of identification and documentation of giftedness.

Selection procedures

After the identification procedures and case study have been accomplished, each individual is re-evaluated and reviewed in terms of appropriate educational programming and placement.

TOPIC VII

1. a) School programs:

   definition of gifted; identification procedures, rigid learning environments; inflexible curriculum designs; language difficulties

   b) Educational systems:

   teacher training inadequate; creativity and flexibility not emphasized with teachers; school administration not aware of different learning needs; egalitarian attitude doesn't permit special curriculum

   c) Social environment:

   lack of recognition of minority giftedness. conflicts between values of minority and mainstream culture; peer pressure devalues achievement; low self-concept of minority; psychological and physical needs of minority often neglected; culturally different gifted in rural areas doubly isolated

   d) Educational decison-making processes:

   lack of state and federal funds for gifted; national policy for culturally different gifted never established; lack of coordination among local, state and federal agencies.

2. 1) Individual IQ test frequently doesn't reflect full potential of student
   2) Teacher judgment frequently biased negatively against bad behavior, low grades, poor performance
   3) Cut-off points generally too high to include high potential but low-performing learners

3. 1) Difference of scores on standardized testing instruments
   2) Differences in learning styles (visual vs. auditory)
   3) Usually lower in non-verbal pursuits
   4) Lower socio-economic status
   5) More difficulty in mastering the linguistic and grammatical structures of the dominant culture

4. 1) Highly trained and qualified teachers and professionals
   2) Flexible and relevant curriculum (emphasis on innovation)
   3) Inclusion of multiple non-standardized criterion measures in identification procedures
   4) Guidance component in educational program

5. Lincoln School in Lexington, Kentucky
   PACE Identification Center in San Francisco, California
   Horrace Mann-Lincoln School in New York
   St. Paul's School in Concord, New Hampshire

Analysis	to detect, to identify, to classify, to discriminate, to categorize.	elements, hypotheses, conclusions, assumptions, statements (of fact or intent), arguments.
Synthesis	to write, to tell, to relate, to produce, to transmit, to originate, to modify, to document.	structure(s), pattern(s), performance(s), design(s), work(s), communications, effort(s), specifics, compositions(s).
Evaluation	to judge, to argue, to consider, to compare, to contrast, to standardize, to appraise.	ends, means, efficiency, economy/economies, utility, alternatives, course of action, standards, theories, generalizations.

(These examples are from the article by Metfessel, et. al., (1969) in the Level B reference list.)

4. Your examples should include a variety of instructional procedures, going beyond mere drill and practice. Some procedures that might be included are: development of student initiated projects in which metric measurements are actually used; searching for evidence of increasing use of metric measurements in various businesses, industries, or publications in the United States; assessments of the problems or challenges in various parts of society brought about by metric conversion (beverage containers may change; impact on tool industry, etc.); consideration of people's attitudes and feelings about metric system and the process of change.

5. This question refers to the Level B reference (Treffinger, 1975) on teaching for self-directed learning. Your response should include: ways of involving students in planning their own learning objectives, or working with a group to plan goals and objectives (through brainstorming or other techniques); using diagnostic conferences, learning agreements, and individualized instructional material to help learners build on unique characteristics and styles; providing a variety of optional learning activities for students to pursue their goals and objectives; and, encouraging students to participate in evaluation and to learn how to conduct peer- and self-evaluation.

6. A variety of activities dealing with encounter lessons, group problem-solving experiences, student application of creative problem-solving principles, and values clarification exercises might be described in responding to this question.

TOPIC IX

1. a) Has desire to dig deeper into material; inquisitive; curious.
   Students with this ability need more challenging, open-ended assignments. Large blocks of time may need to be allotted for indepth work.

   b) Learns rapidly and easily.
   Lessons, assignments and projects should be designed so that the student can pace himself/herself according to the learning rate. Content must be sufficiently challenging so that interest is maintained.

   c) Reveals originality in oral and written expression.
   Learning styles of gifted individuals will probably be unique in contrast to students of lesser ability. Therefore, accommodations must be made for characteristic modes of learning among the gifted. A rich vocabulary will evidence itself in the manner of expression. Fluency and divergency are hallmarks!

2. Grouping

TOPIC XI

1. a) Parents, administrators, and all taxpayers may want to have evidence that the goals of the program are actually being met.
   b) There may be concern for the cost of the program in relation to other programs or benefits derived.
   c) Decisions must be made concerning how the program can be revised, improved, or modified to meet the needs of gifted students more effectively.

2. Testing – utilization of teacher-made or standardized tests to obtain data about students' learning or characteristics.

   Measurement – a process of using a specified scale (usually numerical) to identify differences among individuals or to compare groups.

   Evaluation – a decision-making process, which may involve measurements of many kinds, other (less objective) factors that may be important, and a variety of data sources (which may include test data).

3. The five key features:

	The 15 program requirements:
A. Philosophy and Objectives	1. Existence and adequacy of a document 2. Application of the document
B. Student Identification and Placement	3. Validity of conception and adequacy of procedures. 4. Appropriateness of relationship between capacity and curriculum.
C. The Curriculum	5. Relevance of conception of curriculum 6. Comprehensiveness 7. Articulation 8. Adequacy of instructional facilities
D. The Teacher	9. Selection 10. Training
E. Program Organization and Operation	11. General staff orientation 12. Administrative responsibility and leadership 13. Functional adequacy of organization 14. Financial allocation 15. Provision for evaluation

(This is from Renzulli's DESDEG model.)

4. This question deals with Eash's (1973) model for evaluation of programs for the gifted and talented student. For each model (initiatory, developmental, and integrated), several questions are proposed. These questions deal with *effort* (What have been the main directions? Who has been involved in the program?), *effect* (What effects have been observed on planning-committee members? on students? on teachers? What is the present stage of development of the program?), or *efficiency* (Has a useful program emerged? Have the goals been attained? What has been the cost of the program?).

TOPIC VIII

1. Grouping

   Seminars provide an opportunity for intellectual peers to study in depth relevant topics of interest to the group, current political or social issues, etc. These sessions may be led by a student, paraprofessional, or professional.

   Cluster grouping allows gifted students to remain in a mainstream setting but work in small group sessions with various groupings of students on differentiated assignments and tasks.

   The special classroom is an administrative arrangement which allows gifted students to be assigned to separated classes with their intellectual peers for the major portion of their academics. The students may be totally separated or partially integrated with the mainstream.

   Acceleration

   Advanced placement classes allow senior high students to take course-work on an advanced level at the high school prior to graduation. Credit will be recognized by the high school and most colleges and universities (if high enough).

   The independent study program permits a student to complete a required course or interest area through an individually-planned design. The student plans cooperatively with the teacher or academic counselor in the statement of goals and objectives, course outline, assignments and evaluation.

   Ungraded classes allow gifted children an opportunity to accelerate their learning and move vertically through grade levels and curriculum as maturity and adjustment allow.

   Guidance

   Educational counseling provides an opportunity for gifted students to receive assistance in the selection of appropriate coursework and study areas.

   Career and vocational counseling for the gifted allows specialists to provide assistance and guidance in the selection of appropriate careers. Information can be provided to enable gifted students to make choices among many possible areas of concentration.

2. a) Leadership – providing opportunities in both large and small group work for the gifted student to assume responsibility in the organization of the assignment. Such activities as debate offer experience in the role of a leader.

   b) Forecasting – designing instruction with an emphasis on problem solving, cause-effect relationships, open-ended solutions will provide the gifted student with an opportunity to study and analyze situations and problems and predict what future events or activities might be.

   c) Communicating – offering students a variety of opportunities to have interaction with all students will allow communication skills to sharpen and develop. Tutoring, committee assignments, community involvement are but a few examples of activities.

   d) Decision-making – problem-solving experiences will provide choice opportunities for students to develop and practice these skills. Small committee work and individual projects offer considerable variety.

3. Examples of objectives at more complex levels can take a variety of specific forms, of course. Here are some of the key verbs and objects that illustrate appropriate student objectives at higher levels:

Application	to generalize, to relate, to choose, to develop, to organize, to employ, to restructure, to classify	principles, laws, conclusions, effects, methods, theories, abstractions, situations, generalizations.

   Team teaching – Berkeley Manor, North Carolina
   Seminars – Fontana, California
   Summer programs – Georgia, North Carolina, Pennsylvania
   Cluster grouping – Inglewood and Los Angeles, California
   Special classroom – Wichita, Kansas

   Acceleration

   Advanced placement – Long Beach, California
   Independent study – Los Angeles, California

   Guidance

   Educational counseling – San Diego, California

3. 1) Teachers – their training and experience
   2) Curriculum must be purposefully distinctive
   3) Student selection procedures
   4) Philosophy and objectives
   5) Staff orientation and involvement
   6) Plan of evaluation

4.

	ASSETS	LIMITATIONS
Grouping	allows for indepth study by small groups	may promote separatism
Acceleration	self-paced	may by-pass group interaction
Guidance	helps students to cope; promotes self-understanding	may be unrelated to important learning goals or achievement

TOPIC X

1. Emotional tone of home; learning opportunities provided; conveying values; establishing and encouraging levels of aspiration.

2. Written biography of children; providing anecdotal notes; responding to questionnaire from school.

3. Serving as parent volunteer to assist teacher; keeping in close contact with teacher; providing encouragement of interests and hobbies.

4. Organize special interest study groups outside school hours; conduct special classes on Saturdays and during summers; provide "traveling school" to satisfy or stimulate interests; provide intellectual peers for playmates.

5. a) Plan or provide resources or activities to stimulate interest in assignments.
   b) Provide emotional support through praise and encouragement.
   c) Openly discussing reason for teasing; exploring alternative patterns of behavior to discourage teasing by other students.

6. Organize and maintain an active parent organization; become active in political action; offer volunteer help to school officials in laying groundwork for future programming.

UNIT III

Answer Key

TOPIC XII

1. This question draws from Gowan's *Development of the Creative Individual*, (1972), chapter one.
   a) Stresses creativity as a systematic, deliberate process of generating novel ideas or solutions, emphasizing creative thinking, problem solving or associations.
   b) Stresses the personality traits or characteristics of highly creative persons, emphasizing the nature of the person's make-up or general patterns of responding to experiences and to social pressures.
   c) Emphasis on growth, self-realization, or self-actualization and the dynamic internal effort of people to fulfill themselves and derive satisfaction from becoming a more complete healthy person.
   d) Emphasis on conflict of conscious, reality-bound thinking and experience with more open, spontaneous preconscious or unconscious experiences; creativity emerges as the person deals with such conflict in a way that it encourages regression and productive use of preconscious processes.
   e) Stresses the mystical, non-ordinary experience of reality and altered states of consciousness (natural or drug-related) as stimuli for creativity; creativity viewed as a mystical or even religious experience, not confined by national, conscious cognitive activity.

2. Descriptions are also provided by Gowan (1972) from the Level A readings. Representative theories include:
   a) Torrance, Parnes, Mednick
   b) MacKinnon, Barron, M. Stein, I. A. Taylor
   c) Maslow, Carl Rogers
   d) Kubie, Kris, Schachtel, Freud
   e) Leary, Houston, Weil

   (Additional descriptions in sections 2-6 of Level B readings.)

3. For each theory described, the appropriate references from sections 2-6 of the Level B bibliography provide the bases for assessing responses to these questions.

4. Problems include:
   a) evidence for the validity of measures for key concepts;
   b) evidence for the reliability (accuracy of measurement) for the key concepts of each theory;
   c) practical problems; developing test items, test administration ease and appropriateness for various ages; norms and ease of interpretation;
   d) suitability of evidence for various age levels.

5. Person – stresses personality characteristics or traits of highly creative people.

   Product – stresses assessment of creativity on the basis of number, kind, or quality of products which result from creative efforts.

   Process – focus upon the steps or stages through which the creative act proceeds (the process of creating something).

   Press – emphasis on the relationship of creative behavior to social and cultural pressures or expectations.

   (This question relates specifically to Rhodes (1961) article in the Level A reference list.)

TOPIC XIII

1. Any of the tests listed in the Level A reference list, or selected from the various sections of the Level C list, would be appropriate here.

   Examples: *Torrance Tests of Creative Thinking*; Guilford's *Creativity Tests for Children*; Mednick's *Remote Associates Test*; *Alpha Biographical Inventory*, etc.

2. Response depends upon tests selected in Question 1; information drawn from corresponding sections of Level C reference list.

   Example: *Torrance Tests*

   advantages – 1. widely used in research
   2. span many age ranges

   disadvantages – 1. limited norm groups
   2. requires trained scorers

   Remote Associates Test

   advantages – 1. linked closely to theory
   2. easily scored and interpreted

   disadvantages – 1. very difficult for younger subjects
   2. lack of long-range validity evidence

3. This question relates specifically to issues raised in the Level B reference list in articles by Treffinger and Poggio (1972) and Treffinger, Renzulli, and Feldhusen (1971).

   Example of response:

Validity	Reliability	Usability
1. Better theoretical basis;	1. Control of test administration factors;	1. Objective scoring to minimize errors.
2. Long-term validity studies;	2. Definition of most appropriate kind of reliability data.	2. Development of appropriate, complete norms;
3. Validation using strong external criteria.	3. Clearer understanding of *changes* in creative abilities (short and long term).	3. Ability to understand influences of variations in test procedures and setting.

4. Teacher nominations
   advantages – 1. teachers close to daily behavior of students;
   2. emphasis on creative behavior in natural settings (non-contrived).

   disadvantages – 1. teacher ratings subject to many sources of bias (as are all human ratings);
   2. teachers may not see students actually being creative in some classrooms.

   Self-report of creative accomplishments
   advantages – 1. person knows his/her own attainments well;
   2. focus on actual products or accomplishments, not merely artificial test data.

   disadvantages – 1. person may not represent self and own accomplishments accurately;
   2. individuals may vary in actual criteria used in personal reports.

5. This question relates most specifically to Guilford's *Nature of Human Intelligence* (1967, ch. 6) and Wallach's *The Intelligence/Creativity Distinction* (1971), from the Level B reference list.

   Guilford argues that, when a full range of scores on both creativity and intelligence are considered, there will generally be a positive correlation between the two variables. In general, however, as the intelligence score increases, especially in the above-average range of scores, the variability in the creativity scores will increase substantially. (Hence, for above-average intelligence groups, there will be low correlations with creativity.)

   Wallach argues that there can be observed a dimension (which he calls *ideational productivity* – akin to Guilford's fluency variable) that *is* generally different from intelligence (as typically assessed) in average and above-average groups. He contends, however, that caution is needed before concluding that ideational productivity should be labeled "creativity," urging that more evidence is needed to determine whether such a relationship exists.

TOPIC XIV

1. There are many such stereotypes.
   a) creativity is always expressed through music or the arts
   b) creative people are always eccentric, social misfits
   c) creative people are weird, "off-beat" advocates of unpopular "causes"
   d) creative people are uncooperative, chronic rejectors of all social structure or social relationships.

2. The response to this question is derived from the Level B readings (particularly the articles in reference number 1 by Dellas and Gaier, or those in number 2 by Barron or MacKinnon). Relevant material will also be found in the Smith book in Level A.

   Some examples include:

   originality in thinking; aesthetic sensitivity; cognitive flexibility; independence; sense of personal identity; critical judgment; self-accepting; motivated to achieve in situations emphasizing independence and action.

3. Flexibility and originality in thought; independence of thought and judgment; curiosity; playfulness and sense of humor. See particularly the Dellas and Gaier (1971) article in the Level B reference list.

4. Some possible responses include:
   a) to help teacher be alert to subtle indicators of creative talent among students, which otherwise might be missed;
   b) to help teacher accept student behavior and responses and treat unusual ideas and questions with respect;
   c) to help identify learning activities that build upon students' strengths and preferred ways of learning or expressing themselves.

TOPIC XV

1. This question draws from the Parnes, Torrance, and Smith references in the Level A reference list. In general, conformity and creativity are negatively related. That is, pressures toward extreme conformity may operate to stifle or inhibit creative behavior.

2. This question draws from the Crutchfield (1962) article in the Level B reference list.

   conformity – the conformist complies with social pressure to behave in a certain way or to do a certain thing in a given situation.

   counterformity – the counterformist understands what the expected behavior or response is, but deliberately responds in a contrary fashion;

   independence – the independent person assesses the situation, examines the advantages or disadvantages of compliance or conformity, and responds in a constructive fashion.

3. This question also derives from the Crutchfield article in the Level B reference list.

   In general, many people tend to go along with a response (even an obviously incorrect or inaccurate response) if they perceive strong group pressure to do so. Highly intelligent or highly creative persons are less likely to yield to the force of such pressures than are their less intelligent or creative peers.

4. Norms – the standards established in any culture or social structure to define acceptable individual behavior; the general social definition of "what you are supposed to do."

   Expectations – frequently used interchangeably with "norms" – ways in which group members or perceived pressures define appropriate or acceptable standards of individual behavior.

   Sanctions – the rewards or punishments that individuals receive in a social setting by virtue of appropriate or inappropriate behavior.

   Creativity may be positively or negatively influenced by norms and expectations, depending upon the kinds of behavior that are defined as appropriate and the nature of the sanctions that result from creative acts. (The Stein chaper in the Level B reference list deals with this question.)

5. As described by M. Stein (in the Level B reference list) and other readings in the references (Level A; numbers 2, 4, and 7 in Level B references also) – many differences among social or cultural groups may stimulate or inhibit creativity. These include: cultural continuities and discontinuities; opportunities for creativity; rewards or sanctions on creative products and the development of unique ideas; rigidity of sex-role expectations.

TOPIC XVII

1. Teachers can inhibit student creative behavior by:
   a) failing to accept and respect unusual questions or ideas;
   b) insisting on one right answer for every question or problem;
   c) strictly evaluating every detail of every assignment;
   d) failing to provide deliberately for opportunities for student participation in planning, conducting, and evaluating learning activities;
   e) insisting that neatness and appearance be primary goals of all papers or products;
   f) adhering rigidly to a predetermined course of action, ignoring student questions and curiosities;
   g) criticizing or punishing expressions of fantasy or imagination.

   (Others are referenced to in the Level A readings, and in the Level B references, particularly number 3 (Torrance) and number 4 (Turner and Denny).

2. Some techniques which can be used to foster creativity in any area of instruction are:
   a) developing learning activities which call for the use of creative thinking abilities (fluency, flexibility, originality, and elaboration) – using such exercises as product improvement, new or unusual uses, "just suppose" or "what if" questions.
   b) providing opportunities for students to participate in defining real problems, develop a plan, and conduct a project to solve the problems.
   c) giving opportunities for playful, unevaluated thinking and the constructive use of the imagination;
   d) using strategies to look for an answer in addition to the "usual" answer or the answer in the textbook;
   e) teaching specific skills of creative thinking and problem solving (deferred judgment, attribute listing, ide checklists, forced relationships, brainstorming, etc.)

3. The classroom environment that is conducive to creative learning has many attributes. These are described in the Torrance and the Torrance and Myers books (Level A) and in several of the references in the Level B list. Some of the most commonly-cited attributes include:
   a) freedom from the constant threat of evaluation;
   b) encouragement to express unusual (even wild or silly ideas);
   c) emphasis on problem finding and problem solving, not just answer giving;
   d) acceptance of divergence among pupils;
   e) presence of many stimulating, curiosity-provoking materials;
   f) active student participation in planning conducting, and evaluating learning experiences.

4. The question relates specifically to the article by Williams (1969) in the Level B reading list. Williams emphasizes the need for instructional planning to consider three aspects;
   a) pupil cognitive and affective behaviors (fluency, flexibility, originality, elaboration, curiosity, risk-taking, complexity, and imagination);
   b) traditional subject areas;
   c) specific teaching strategies, designed to provide appropriate learning activities for students.

TOPIC XIX

1. Bruner emphasizes that discovery learning leads to:
   a) helping students organize and conduct learning more effectively;
   b) greater utilization of intrinsic sources of motivation, and to improved involvement in the learning process;
   c) development of specific skills for solving problems, or learning the methods of procedures of more effective learning;
   d) improved efficiency in remembering and using what is learned.

   Suchman emphasizes that students participating in "Inquiry Training" work with problems that are "real and meaningful", that they have freedom to gather data and organize their efforts, and that they have a "responsive environment." These efforts lead to many of the same benefits proposed by Bruner.

2. Ausubel's criticisms of discovery learning are summarized in his 1961 article (Level B reference list). These include a number of what Ausubel considers "unsupportable claims" by proponents of discovery learning; among these:
   1) that discovery is best for transmitting subject matter;
   2) that problem solving is the primary goal of education;
   3) that every child can become a critical and creative thinker;
   4) that expository teaching is authoritarian;
   5) that discovery methods are unique in promoting motivation and self-confidence.

3) Inquiry or discovery approaches can be useful in fostering creative thinking in several ways:
   a) providing opportunities for expression of many possible ideas, not merely finding one right answer;
   b) opportunities to employ many creative thinking methods and techniques in data gathering (i. e., using deferred judgment, brainstorming);
   c) active involvement of students in working on problems that are "real and meaningful" enhances motivation and curiosity;
   e) students have opportunities to develop flexibility in thinking through close examination of puzzling, perplexing phenomena.

4. Several assumptions underlying open education are similar to assumptions made by teachers attempting to foster creativity; these include:
   a) importance of student involvement in planning and conducting learning;
   b) emphasis on real, personally-interesting goals and problems, not merely things the teacher decides should be studied;
   c) emphasis on allowing students to work using their own preferred styles of learning and at their own rate;
   d) utilization of many different media to stimulate the imagination and enhance student learning;
   e) development of instructional methods which do not assume that all students must be learning the same thing at the same time.

   (Others are discussed by Dillon and by Cole in the Level B reference list, and by articles in the Nyquist/Hawes book in the Level A reading list.)

5. This reference relates specifically to the article by Cole (1969) in the Level B reading list. Process education is concerned with students' opportunities to develop the intellectual skills or thinking abilities that are necessary for productive thinking and for problem solving (in school and well beyond). Cole describes many ways in which such processes are comparable with educators' concerns for creativity and creative thinking.

TOPIC XVI

1. Because of the number of choices, a wide variety of responses may be possible. The most appropriate sources for checking responses are:

   Davis, *Psychology of Problem Solving: Theory and Practice* (1973) – in Level A.

   Torrance (1972) article or Treffinger/Gowan (1971) bibliography from Level B reference lists.

   Appropriate programs include: *Productive Thinking Program*; *Purdue Creativity Training Program*; Ginn, *Ideabooks* or *Sounds/Images*; Williams', *Total Creativity Program*; Parnes, *Creative Behavior Guidebook* and *Creative Behavior Workbook*, among others.

2. For the programs selected in Question 1, the Level A reference (Davis) or the Level B article by Torrance (1972) should be consulted; appropriate research articles are also included in the Level C reference list by program.

3. Most programs, even if they were originally designed to be self-instructional programs, are influenced by the active participation of the classroom teacher. The extent of the teacher's influence seems to be stronger when the programs are used over a longer time period in the classroon (i.e., over an eight week period or longer as opposed to very rapid presentation of instruction). Teachers may enhance the program's effectiveness by creating other materials to help students use creative thinking in school assignments and projects; or inhibit the effects of programs by making the use of the program a "drill and practice exercise" and not accompanying it with other related activities.

   (See specifically the Treffinger/Ripple article in the Level B reference list.)

TOPIC XVIII

1. This model is presented in many sources, including the Popham/Baker book (Level A) and the Feldhusen/Treffinger article (1971) in Level B.
   I. Plan goals and objectives
   II. Assess student characteristics and entering behavior
   III. Plan instructional procedures
   IV. Evaluate performance
   V. Feedback cycle.

2. Creative thinking is related to each aspect of the planning process:
   I. Planning goals and objectives which emphasize (or at least include) higher level, creative thinking abilities, not merely recognition and recall.
   II. Adapting instruction to take into account learning styles and creative thinking abilities of students;
   III. Providing open-ended learning activities, incorporating opportunities for inquiry and discovery;
   IV. Evaluating learning on higher levels, not merely factual knowledge;
   V. Using evaluation data to revise and improve instructional programs, rather than merely to make judgments about student accomplishments.

3. A logical sequence may be defined in several ways; one example is given in the Feldhusen/Treffinger (1971) article, in the Level B references. It includes several steps: analyzing concepts and principles, outlining the content to be taught, writing goals and objectives (including higher levels), communicating objectives to students, utilizing a variety of instructional materials and methods, including specific opportunities for creative thinking and problem solving; assessing pupil performance; evaluating the instructional process and revising the approach accordingly.

4. Inadequate instructional planning may lead to a number of problems; among those which have specific implications for creativity are:
   a) failure to take into account individual differences among students (resulting in boredom or frustration for more creative students);
   b) emphasis on teacher-centered and teacher-dominated activities (restricting opportunities for creative involvement by students);
   c) over-emphasis on low-level recognition and recall activities (reducing opportunities for use of creative-thinking and problem-solving abilities).

Title VI of the Civil Rights Act of 1964 states:

"No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, or denied the benefit of, or be subject to discrimination under any program or activity receiving federal finanacial assistance."

Therefore, federal programs must be operated in compliance with this law.

Answer Key to Pre-Instruction Quiz